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CHILD ACCOUNTING AND ‘THE HANDLING OF HUMAN SOULS’

Stephen P. Walker

Cardiff Business School
Aberconway Building
Colum Drive
Cardiff
Wales UK
CF10 3EU

Email: Walkers2@cardiff.ac.uk
Tel: 029 20876546
Fax: 029 20875129

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Abstract

Child accounting texts published in the US during the early to mid-twentieth century are utilised to reveal the potency of Foucauldian analyses of accounting as a disciplinary technology. It is contended that child accounting - a vogueish technique for recording, monitoring and governing the school pupil - provides a compelling illustration of Foucault's emphasis on individualization as a foundation for the exercise of disciplinary power. Further, child accounting encompassed mundane practices which could activate disciplinary power such as continuous hierarchical surveillance and normalizing judgment. Centred on the child in the place of instruction rather than the employee in the corporation, the study offers a socio-historical exploration of accounting at its margins and in a domain where Foucault's work on discipline has particular resonance.

Keywords: child accounting, USA, Foucault, disciplinary power, individualization, surveillance, normalizing judgment.

Introduction

The white, cool, thinly ruled record book sat over us from their [teachers'] desks all day long, and had remorselessly entered into it each day-in blue ink if we had passed, in red ink if we had not- our attendance, our conduct, our “effort,” our merits and demerits; and to the last possible decimal point in calculation, our standing in an unending series of “tests” – surprise tests, daily tests, weekly tests, formal midterm tests, final tests. ... That white thinly ruled record book figured in my mind as the judgment seat; the very thinness and remote blue lightness of its lines instantly showed its cold authority over me; so much space had been left on each page, columns and columns in which to note down everything about us, implacably and forever. As it lay there on a teacher's desk, I stared at it all day long with such fear and anxious propriety that I had no trouble believing that God, too, did nothing but keep such record books, and that on the final day He would face me with an account in Hebrew letters whose phonetic dots and dashes looked strangely like decimal points counting up my every sinful thought on earth (Kazin, 1951, pp. 17-18).

So wrote Alfred Kazin, writer and literary critic, of his schooldays in 1920s New York. To the modern eye it appears quite extraordinary that the mere recollection of a “white thinly ruled record book” should continue to incite such angst and disdain in adulthood. It may also surprise to learn that it is likely that this record book, in all its conspicuous omniscience, was perceived by the teacher who kept it as a component part of an accounting regimen - child accounting - “the recording of all activities, instructional and executive, that are necessary in the keeping of the essential records of the individual child during his school life” (Moehlman, 1924a, p. 27). Devising a comprehensive, uniform system of child accounting occupied the attention of many educational administrators and researchers in the USA during the first half of the twentieth century. Child accounting systems were implemented in several states.

¹ Courtis (1924, p. 8).

As with Taylorism, from which its proponents often drew inspiration, child accounting generated heated debate among contemporaries and later commentators. Its advocates claimed that the technique was progressive and conducive to social efficiency and the maximization of educational opportunity. It enabled the measurement and alleviation of retardation, truancy and child labor (*Manual for Child Accounting*, 1953, p. 1; Michigan State Teachers' Association, 1924, pp. 3, 7; *Manual of Instructions*, 1955, pp. 35-36). Critics of the practice detected something more sinister. Child accounting was perceived as an illustration of the socially divisive effects attending the intrusion of quantification and managerialist ideals in education (Young, 1929; Dewey, 1921, 1922). It was seen as a bureaucratic imposition on the teaching profession (Iowa State Teachers Association, 1927, p. 3), a technique which helped turn schools into factories, and a contributor to a loss of humanism in educational purpose. For one historian the measurement craze, of which child accounting was a foremost manifestation, amounted to nothing less than "an American tragedy in education" (Callahan, 1962, pp. 244-264). It constituted a diversion from the essential objects of pedagogical endeavor - "In the end, the American people got what they deserved for forcing their educators to spend their time on accounting rather than on the education of children" (p. 120).

Although child accounting prescriptions and practices in US public schools from the 1920s to the 1950s have been studied by historians of educational administration they appear to have escaped the attention of historians of accounting. This is despite their potential to enrich understandings of the actualisation of accounting in the social domain. Moreover, child accounting provides an opportunity to advance key discourses on the manner and extent to which accounting has functioned as a technique of disciplinary power. Child accounting also offers a compelling instance of the manner in which accounting assumes "different forms in different places and at different moments of time" (Hopwood, 2007). It provides further scope for exploring how accounting is often most interesting at its margins (Miller, 1998). In the context analysed here accounting was understood as a measurement technique which extended beyond the economic entity and the processing of financial transactions. One authority on the standard terminology of educational record keeping defined 'accounting' broadly as "The procedure of maintaining systematic records of happenings, occurrences, and events relating to persons, objects, or money and summarizing, analyzing, and interpreting the results of such records" (Putnam, 1974, p. 112).

The academy is alert to the notion that accounting is a practice with profoundly social derivations and implications (Burchell et al, 1980; Hopwood, 1983; Miller, 1994, 2001). More challenging is demonstrating its assembly and significance in places associated with the government of social as opposed to economic life (Miller & Rose, 1990). During the 1980s and 90s a number of commentators pointed to the ways in which historical studies might advance understandings of accounting in the social realm (Burchell et al, 1980; Hopwood, 1985; Hopwood & Johnson, 1986; Miller & Napier, 1993) but the substantial focus of historical scholarship on calculative practice in the business enterprise has not been conducive to sustained progress (Walker, 2008a).

Indeed, performing studies which identify the operation and intertwining of accounting in the social past is complicated by the problem of identifying what the precise social implications of accounting might be (Hopwood, 1985). When formative research agendas on accounting and the social were set, it was recognized that this was not only a field of “potential significance” but also one of “enormous complexity” (Burchell et al, 1980). Demonstrating the social construction, significations and impacts of accounting is challenging. The consequence is that “the relationship of accounting to the social has tended to be stated and presumed rather than described and analyzed” (Burchell et al, 1985). In historical studies there is often a reductionist descent towards vague generalities about the social implications of accounting, focusing on the social *contexts* of its emergence and operation, or the deployment of broad definitions of calculative technologies which can render the presence of accounting unconvincing (Walker, 2008b).

Theoretical and epistemological explorations of the intersections of accounting and the socio-historical have been urged to address the difficulties of locating the social determinants and impacts of the practice (Hopwood, 1985). One philosopher whose work has particular significance here, given his essential concern with the social realm and the institutions within it, is Foucault. Foucault’s insights to disciplinary power have featured large in attempts to enlighten the history of accounting. His analysis supplies the theoretical framework for the current study which seeks to extend knowledge of the functioning and potential impacts of accounting in the social domain through an historical exploration of child accounting as an instrument of disciplinary power.

In the next section a Foucauldian framework is outlined and is attended by a review of the application of Foucault’s ideas to previous historical studies of accounting. There follows a contextualized discussion of the emergence of child accounting from the late nineteenth to early twentieth century, its differentiation from other forms of accounting in the educational arena, and the extent of its implementation from the 1920s. The paper then analyses child accounting as an instrument of disciplinary power by demonstrating its use as a technique of individualization, continuous hierarchical observation and normalizing judgment in relation to the school pupil. In addition to summarizing the principal findings of the study as they relate to the exercise of individualized discipline, it is suggested in the conclusion that child accounting also illustrates the expansion of the quantitative techniques deployed to govern target populations in disciplinary society.

Disciplinary power and the pedagogic in accounting history

Foucault’s thinking on the emergence of disciplinary society, particularly as espoused in *Discipline and Punish* (originally published in 1975), has been rehearsed many times in the accounting literature. Here it is sufficient to reprise some essential tenets in order to frame the subsequent analysis of the child accounting prescriptions which appeared in twentieth century America.

While Weber recognised that rational administrative processes in political and economic organisations generated a form of bureaucratic discipline and Marx inspired consideration of

forms of labour discipline in the capitalist factory, Foucault's work on the prison, school and hospital concerns a pervasive and power-centric notion of "corporeal, attitudinal and behavioural discipline, i.e., the disciplinary society" (O'Neill, 1986). For Foucault the exercise of disciplinary power demands individualisation: "Instead of bending all its subjects into a single uniform mass, it separates, analyses, differentiates, carries its procedures of decomposition to the point of necessary and sufficient single units ... Discipline 'makes' individuals; it is the specific technique of a power that regards individuals both as objects and as instruments of its exercise" (1991a, p. 170). Disciplinary power is activated through simple instruments, mundane practices of continuous hierarchical surveillance (such as monitoring and recording conduct) and normalizing judgement which establishes behavioural expectations. Hierarchical observation and normalizing judgement are also combined in the highly ritualised technique of the examination (1991a, p. 184). As Rose (1990, p. 7) has argued "The examination not only makes human individuality visible, it locates it in a web of writing, transcribing attributes and their variations into codified forms, enabling them to be accumulated, summated, averaged and normalized – in short, documented". These disciplinary instruments render subjects observable, permitting their identification, analysis and governance. In disciplinary society the impacts of such technologies are internalised, they regulate social conduct and the self, and thereby encourage adherence to norms and facilitate the suppression of deviance.

The potential role of accounting and accountants in these instruments of disciplinary power become apparent when it is recognised that activating hierarchical observation involves techniques of writing, recording and the engagement of associated functionaries. Further, measurement is pivotal to the determination of normalising judgement. It is core to the five operations identified by Foucault which encourage the normalisation of individuals: comparison, differentiation, hierarchization, homogenization and exclusion (1991a, pp. 182-183). The examination also concerns measurement, calculation, description, classification and registration and thereby renders the examined "a describable, analysable object" (1991a, p. 190). It places individuals in a disciplinary "network of writing; it engages them in a whole mass of documents that capture and fix them" (1991a, p. 189) and facilitates their control (1991a, pp. 191-192).

Given its presence in the suite of disciplinary techniques and practices accounting has become "a fertile area for applying Foucault" (Hoskin, 1998). Hoskin and Macve (1994) consider that "at the simplest level of its inscription, accounting is a technology that writes value, and presents in that writing a space for examination-be it of physical flows, monetary values or human performance, of past events, present states or future possibilities". Accounting applies writing, examining and grading to the financial arena and disciplines through devising "objective measures which can then become standards and targets for future performance" (Hoskin, 1998). More widely, accounting operates within a "disciplinary matrix" through its capacity to exert "discipline on people and performance by its forms of calculation" and through its development as a field of expert knowledge (Hoskin, 1994).

The scholastic arena analysed in this paper loomed large in Foucault's discussion of the instruments of disciplinary power. Given the discernible centrality of examination in his

work, indeed his preoccupation with it, Hoskin (1990, 1994) describes Foucault as a “crypto-educationalist”, “the grand master of pedagogic power”. Hoskin (1990, p. 51) challenges researchers “to consider how ‘the educational’ may in different epochs, in different ways, function as the hyphen in the power-knowledge relation”. While *Discipline and Punish* is billed as a ‘history’ of the prison Foucault relied heavily on examples of schools to illustrate the emergence and operation of disciplinary technologies (Marshall, 1990, p. 23). He also emphasised the extent to which systems of discipline were orientated towards the developing child and others requiring correction such as the delinquent, the mad and the patient (Hoskin, 1994, p. 193). He related the hierarchized surveillance regimes implemented in elementary schools which embraced the recording of pupil misdemeanours. His discussion of normalizing judgement makes much of the disciplinary regimes imposed to ensure the conformity of school pupils. Foucault (1991a, p. 180) refers to the double system of “gratification-punishment” - of the rewards and penalties imposed by teachers on pupils.

Although Foucault may not have uttered anything explicit about accounting he did use accounting terminology to illustrate the operation of disciplinary instruments in educational, military and medical institutions. For instance, he noted the bipolarity of normalising scholastic regimes and procedures which established that “all behaviour falls in the field between good and bad marks, good and bad points. Moreover, it is possible to quantify this field and work out an arithmetical economy based on it. A *penal accountancy*, constantly brought up to date, makes it possible to obtain the *punitive balance-sheet* of each individual” (Foucault, 1991a, p. 180, *emphasis added*). Foucault observed how, during the late eighteenth century, The Brothers of the Christian Schools applied such a quantification of “awards and debits” (1991a, p. 181) to pupils. The placement of pupils in grade distributions and their consequent rank ordering and classification also disciplined through reward and punishment and encouraging conformity, as at the *École Militaire* (1991a, pp. 181-182).

Foucault also discussed the examination as a disciplinary technique by reference to the Brothers of the Christian Schools, and their use of it as “a constantly repeated ritual of power” (1991a, p. 186). In scholastic settings the examination permitted the accumulation of knowledge about pupils, their attainments, abilities and morals. This knowledge, inscribed as marks and descriptions was written in educational registers and other documents. It allowed comparisons of individual performance and conduct, the identification of differences and ‘gaps’. The examination constitutes a “dividing practice” – a means by which the subject-individual is set apart from others and regulated (Foucault, 1982). In the instance discussed in the current paper such registers and other documents formed part of child accounting - a technique which recognised that the award and inscription of marks had implications for behavioural discipline (*Manual of Instructions*, 1955, p. 76).

Foucault’s work on power/knowledge has been enormously important to studies of accounting history (McKinlay, 2006; McKinlay & Starkey, 1998; Stewart, 1992). Of particular significance was a series of papers published during the mid-1980s by authors such as Hopwood (1987) on archaeological analysis, Hoskin and Macve (1986, 1988) on disciplinarity and grammocentrism, and Miller and O’Leary (1987) on governmentality and the calculable person (Carmona, 2006). The pursuit of genealogies and genealogical method

in accounting history has also been advocated (Miller & Napier, 1993; Kearins & Hooper, 2002). These formative contributions energised debate in the field through, for example, their problematizing conventional economic rationalist explanations for the imposition of costing systems in industrial organisations. They have also inspired scholars in disciplines beyond accounting to look afresh at the disciplinary functioning of calculative devices in modernity.

Foucauldian histories have, however, proved contentious. Traditionalist historians are irritated by Foucault's genealogical approach to history and evidence (Morris & Rothman, 1998; Rowlinson & Carter, 2002). The fact that Foucault's historical illustrations of the institutional activation of disciplinary technologies in *Discipline and Punish* were less than exhaustive has resulted in some scholars urging deeper investigation and greater empirical sensitivity (Hoskin, 1990, p. 45). Another issue emanates from the fact that Foucault had relatively little to say about accounting specifically and the economic organisations which form the principal investigative sites of the accounting historian. According to Hoskin (1998) "the strange fact is that Foucault wrote virtually nothing on management or accounting". His work on technologies of disciplinary power concerned prisons, workhouses, hospitals and schools, not the factory (see also Grey, 1994; McKinlay, 2006).

Foucault's attention focussed more on the disciplining of the inmate than the productive worker and the capitalist exploitation of labour (Clegg, 1998). Thus Marxian scholars of accounting consider that the emphasis of Foucauldians on text and language is reductionist, particularly in its de-emphasis of the material "world of labour, production, consumption and accumulation" (Neimark, 1994, 1990). The demonstration of accounting (as opposed to bureaucratic rules) as a disciplinary technique only appears feasible in Foucault-inspired studies when "very high levels of generality" are assumed or when accounting-resonant practices such as 'valuing' are added to the suite of disciplinary technologies (Armstrong, 1994).

Thus to reach destination accounting, Foucault's "texts have travelled far from their original contexts" (Carter et al., 2002; Grey, 1994). Given these criticisms another approach might be for historians to seek evidences of 'accountings' in organisations more clearly within Foucault's orbit, in particular the school. If the investigation of accounting as a disciplinary technique in the material world of the factory is problematical then the search might extend to demonetised settings beyond the economic. By studying their operation in institutions closer to Foucault's originating base we may more convincingly assess whether accounting innovations impacted as disciplinary technologies. Given its heterogeneity as practice, the increasingly diverse arenas in which it is applied and the abstraction of accounting knowledge in modernity (Burchell et al., 1980; Hopwood, 1983), there is every prospect that such searches for accountings will prove successful. Historians of medical practice for example have observed the manner in which "the clinical gaze crucially depends on the existence of account books" (Berg & Harterink, 2004). A further instance is discussed here, the systems of child accounting which were devised for US public schools during the early to mid-twentieth century.

This focus on the school demands re-acquaintance with one of the most influential papers in accounting history, that by Hoskin and Macve (1986) on ‘accounting and the examination’. Their work is particularly important in its locating the transference of disciplinary practice from pedagogic institutions to the business organization. This carrying of Foucault from the socio-educational into the economic has proved controversial. Hoskin and Macve contend that accounting developments are entwined with the emergence of disciplinary techniques of writing, examination and marking in educational institutions. A “new human book-keeping” was applied to school pupils long before factory labour. Following Foucault, Hoskin and Macve discuss the significance of the accounting regime in elementary Christian schools during the eighteenth century (also Hassard & Rowlinson, 2002).

Hoskin and Macve (1986) refer to the adoption of marking systems in colleges and schools during the early nineteenth century and their capacity to establish standards, grades, and inflict punishment or reward. In some educational institutions these innovations were strongly infused with accounting techniques and vocabularies. But rather than extend their analysis to other educational institutions in later times, Hoskin and Macve then turn their attention to the consequences for human accountability of the dissemination of educational innovations in the factory. Indeed their focus is subsequently on what they consider is “perhaps the most important paradigm case – in the genesis of a new-power knowledge configuration” (1988, p. 63) and the role of graduates from the US Military Academy at West Point in the development of cost accounting.

In the current study the history of accounting in educational practice is taken beyond the nineteenth century. Arguably, the most tangible manifestation of the interrelationship between practices of education and accounting came in the form of child accounting in the US during the early twentieth century. This subject offers a potentially important illustration of the new power-knowledge configuration, one which centres on the school rather than the factory, on the individual child-pupil as opposed to the worker or manager.

The emergence and practice of child accounting

Some contemporary commentators perceived that the proper administration of state schools demanded systems of accounting more elaborate than those operated in large corporations (Callahan, 1962, pp. 85-86). It is not surprising therefore that during the early twentieth century accounting in the educational field became increasingly fractured. As the functions of school administration expanded and diversified so did the scope of the accounting attending it. One authority on school management, writing at the end of the focal period of this study, advocated a kind of total accounting:

...every school or school system which would be efficiently administered must systematically collect, organize, file, and use information which will show the efficiency of every school employee, every pupil, every school material, and every school process. If this information is to be readily available, numerous school records must be kept-records of teachers, janitors, bus drivers, principals, supervisors, nurses, attendance workers, maintenance workmen, clerks, pupils, budgets, insurance, school

bonds, current expenditures and receipts, internal accounts, books, supplies, and school property (Reeder, 1958, pp. 553-554).

By the 1950s commentators increasingly categorised the accounting performed in education as either cost, financial or child/pupil. The differences between these variants are now discussed as a prelude to an emphasis on the last mentioned.

School cost and financial accounting

Cost accounting in the educational domain emerged in the closing years of the nineteenth century in response to concerns about the escalating cost of public instruction. These concerns encouraged analyses of the cost per child unit of schooling. In 1899 a report by the National Education Association argued “By careful comparative study, railroad men know the average cost of hauling freight per ton mile, and the cost per mile of transporting a passenger. Those administering schools should be as well informed upon the cost of education” (quoted in Strayer & Thorndike, 1913, p. 271). Educational cost accounting was “well established in American education” by 1918 (Callahan, 1962, p. 164). Its advance reflected the rise of quantification in school administration, the spread of Taylorism, a determination to calculate the costs of retardation, locate inefficiencies in provision and reduce the burden on the public purse.

Early educational cost accountants often perceived the school as a factory and its children as raw material to be processed and outputted as graduates at minimum cost (Callahan, 1962, pp. 73-76; 99, 158-165, 176). Its practitioners performed detailed calculations of the cost per pupil of public provision to locate inefficiencies in: city systems, individual schools, instruction in particular subjects, and the teaching of pupils of different ability. Strayer and Thorndike (1913, pp. 278-351) for example, calculated the comparative cost per pupil of numerous categories of expense ranging from teaching to janitor’s salaries and textbooks. Similarly, in 1914 Hutchinson reported his attempt to calculate “standard unit costs for public education” which administrators could use as a benchmark to “determine the efficiency of educational production” in their own systems (pp. 9-11). Cost accounting principles and practices were to feature beyond the 1910s as concern persisted over the escalating burden of state educational provision, and the need for school budgeting, maximising efficiency and the elimination of waste (Callahan, 1962, pp. 186-187; Wilson, 1966, p. 685).

During the nineteenth century financial accounting in US schools was considered relatively simplistic but with the expansion of public instruction and the growth of city school systems greater sophistication was deemed necessary (Strayer & Thorndike, 1913, pp. 269-271). As the century advanced, financial accounting was increasingly associated with bookkeeping, transactions processing, the preparation of financial statements and treasury management (Reeder, 1958, pp. 561-573; Strayer et al. 1927, p. 23; Wilson, 1966, pp. 685-693). Its outputs comprised a widening range of financial and educational disclosures in annual reports prepared by school administrators to justify public expenditure and increase accountability to taxpayers (Callahan, 1962, pp. 226-228). The need for uniformity within and between states was a recurrent theme. A uniform financial accounting system was introduced in New York state in 1916 and elsewhere subsequently. By the end of the period studied the majority of

states had adopted the common financial accounting regimen for local school systems prescribed in a handbook devised by professional accountancy bodies and the US Office of Education (Reeder, 1958, pp. 562-564; Wilson, 1966, pp. 687-688).

Child accounting

The focus here, child accounting, had a different emphasis from cost and financial accounting in the educational arena. It was concerned with comprehending the pupil rather than the use of financial resources: “Its purpose is its definition, namely, the diligent recording of all instructional, administrative, and supervisory activities necessary in connection with the educational progress and efficiency of the individual child and the group during the entire period of his school career” (McNicholas, 1931, p. 5). Therein could be found its capacity as a disciplinary technology.

Child accounting experts in the US traced the origins of their craft to the school register (also known as the ‘bill’, ‘catalogue’ or ‘book’). From the early nineteenth century increasing numbers of educational authorities required that teachers maintain an accurate record of the pupils who attended school (Heck, 1925a, pp. 20-23; McNicholas, 1931, pp. 9-14; Goslin & Bordier, 1969, pp. 34-35).² On occasion the register became a repository of data about pupil performance and conduct as well as attendance. In 1840s Boston, for example, a ‘Teacher’s Record Book’ was prescribed in which was entered pupil absences, remarks about tardiness, and “a daily account of mental progress and moral development” (Heck, 1925a, p. 34).

Contemporaries increasingly recognised the utility of the register as an instrument for locating the pupil in time and space and the disciplinary effects of more comprehensive record keeping in relation to scholarship and conduct (Heck, 1925a, p. 187). In nineteenth century Boston teachers were encouraged “to remind their pupils of the important consequences, which may result to them individually from these perpetual records” (Heck, 1925a, p. 35). In 1839 the Secretary of the Board of Commissioners of Common School in Connecticut reported that when its contents were disclosed to parents “The register has been found to be one of the most powerful instruments of discipline in the schoolroom and an invaluable auxiliary in securing punctual and regular attendance” (quoted in Heck, 1925a, p. 23). In 1843 the Massachusetts Board of Education instituted a permanent school register for use throughout the state. This vehicle embraced a scholastic history of each child. Its disciplinary potential was revealed by the assertion that the register “will furnish to each pupil the means of self-comparison; and, if skilfully managed by the teacher, they may be made a powerful incentive to good and dissuasive from evil...By the present register, each one will be approved or condemned according to his deserts” (quoted in McNicholas, 1931, pp. 13-14).

During the late nineteenth century it was recognised that in order to monitor the school-age population data about individual pupils had to be more complete, embracing knowledge of parents, home circumstances, and the physical and mental condition of the child. Individual record cards were devised in addition to registers for inscribing longitudinal data about pupil

² Heck (1925a, p. 188) reported that school registers were compulsory in all but one state.

performance (Strayer & Thorndike, 1913, pp. 251-254; Moehlman, 1924c; McNicholas, 1931, pp. 14-26). By 1912 the US Bureau of Education reported that pupil record cards developed by the Committee on Uniform Records and Reports of the National Education (formerly Teachers) Association had been adopted in 216 cities with the aim of recording the pupil's career from kindergarten to elementary school. These cards were supplemented by special forms for "cases of physical abnormal and retarded children" (National Education Association, 1912, pp. 3, 27-31). It was recommended that the data on record cards be deployed to monitor and compare the rates of progress of groups of children, identify factors affecting their progress and also classify pupils by age and grade.

School record-keeping was transfigured into child accounting during an age of "quantification and scientism" in American education (Lagermann, 2000, p. xi). During the first third of the twentieth century educational research was dominated by the child study movement (de Landsheere, 1999). The measurement mania was exemplified by a new focus on the psychological study of the individuated pupil, the collection of educational statistics through social surveys and a Taylorite thirst for facts as the foundation for securing greater efficiency in public schools. It has been claimed that "by the middle of the 1920s, quantitative measurements had been generally accepted as an essential part of the professional study and practice of school administration" (Lagermann, 2000, p. 95).

Numerous instructional texts appeared on educational measurement and its potential for pupil evaluation, classification and motivation (Ross, 1941, pp. vii, 3-28). The period witnessed the invention and application of pupil examination beyond the specifics of subject-knowledge to embrace a plethora of tests of mental capacity, character and personality. The armoury of disciplinary techniques associated with the examination was expanded by advances in psychological testing and statistical theory, and the compilation of measures of normative performance. According to Tyack and Berkowitz (1977) child accounting emanated from this "new "educational science" and new modes of business administration adapted to schooling".

It is important to relate the demographic and legal context in which this nouveaux empiricism flourished. The population of the US increased from 45 million in 1875 to almost 120 million in 1926, fuelled by the entry of 27 million immigrants (Butts, 1978, pp. 229-233; Tyack, 1974, p. 230): "Coming predominantly from the poorest socioeconomic groups in southern and eastern Europe, these uprooted, non-English-speaking children from semiliterate families with diverse cultural backgrounds constituted an educational problem unparalleled in human history" (Callahan, 1962, pp. 14-15). There was a substantial expansion of the (particularly urban) school population and in the cost of educational provision (Lagermann, 2000, p. 8; Tyack, 1974, pp. 183-186). Enrolments increased by 20% between 1910 and 1920 alone. The strategies designed by educationalists and governments in response to these socio-demographics "were to be found in "science," in administrative efficiency, and professional specialization" (Tyack, 1974, p. 180). More sophisticated bureaucratic devices were necessary to monitor individuals within the burgeoning school population (Davis, 1948, pp. 19, 374; Goslin & Bordier, 1969, pp. 31-32). The increasing ethnic and cultural diversity of children entering schools also meant that new techniques were required to objectively

differentiate and classify pupils, and identify vocational directions appropriate to individual attainment and social efficiency (Lagermann, 2000, p. 92; Tyack, 1974, pp. 180, 199, 206).

The problem of accommodating and monitoring the expanding school population was exacerbated by the adoption of compulsory attendance laws by individual states from the 1870s (Katz, 1976, pp. 17-18). Campaigns against child labour and a determination to assimilate and Americanize immigrants and their children encouraged the passing of these laws in all states by 1918 (Butts, 1978, pp. 181-184; Tyack 1974, pp. 229-255). However, enforcing compulsory attendance was problematical particularly in the absence of “an accurate account of which children were supposed to be in school” (Katz, 1976, p. 20). The need to identify and track the population of school age demanded “a most careful accounting of each child” (Heck, 1929a, p. 4; Garinger, 1940). This was to be achieved through what became a core technology of child accounting – the school census. Some state bureaucracies established to enforce compulsory attendance, enumerate and register children were to mutate into specialist departments of child accounting or pupil personnel (Sullivan, 1918; Mosher, 1933; Tyack & Berkowitz, 1977; North Carolina, 1954).

Measurement technologies for comprehending the school child were advanced by an expansion of educational research in universities. Lagermann (2000, p. 16) argues that “between roughly 1890 and 1920, education research emerged as an empirical, professional science, built primarily around behaviourist psychology and the techniques and ideology of quantitative measurements”. This was manifest in the growth of child study, and, from the second decade of the twentieth century, in an emphasis on the practical implementation of quantitative techniques emergent from the increasingly specialised field of educational psychology (Lagermann, 2000, p. 40; Goslin & Bordier, 1969, pp. 36-38).

One of the foremost contributors to the ‘measurement movement’ in education was Edward L. Thorndike, author of *An Introduction to the Theory of Mental and Social Measurements* (1904), a book credited with marking “a new era in the study of educational problems” (Callahan, 1962, p. 189; also Lagermann, 2000, pp. 56-62; de Landsheere, 1999). Thorndike considered “that the facts of human nature can be made the material for quantitative science” (1904, p. v) and accordingly pursued “precise, numerical measurements of anything and everything relevant to education” (Lagerman, 2000, p. 59). He explored the capacities and attainments of individual pupils and prepared frequency distributions to elicit typical performances and deviations from the same (Thorndike, 1904, pp. 22-40). Following Thorndike a ‘testing movement’ was unleashed which enabled the measurement of diverse tasks, knowledge and skills (Lagermann, 2000, p. 88; Tyack, 1974, p. 207; Good, 1956, pp. 399-400). Lagermann (2000, p. 88) comments “The proliferation of achievement tests was phenomenal: between 1917 and 1928, some 1,300 achievement tests were developed in the United States; by 1940, there were, 2,600” (see Bureau of Educational Research, 1929; Tyack, 1974, p. 207). This represented a substantial advance in the availability of disciplinary instruments and in the disciplinary scope of the examination.

Experts were also necessary to process the mass of child-centred data being generated during the early twentieth century. The application of scientific method and measurement in schools

increased the demand for educational administrators and elevated their occupational status (Tyack, 1974, pp. 182, 185). Mass public education demanded that schools and state bureaucracies institute more complex systems of record keeping not only to generate statistical reports and monitor finances but also to account for “the throughput of pupils” (National Education Association, 1912). In consequence “Forms multiplied and files bulged. New corps of specialists appeared” (Tyack, 1976). One official from the US Bureau of Education likened the recording needs of city-school systems to those of an expanding business:

A complete revision in the recording and reporting of school data is demanded by the conditions which confront us. Our schools have grown in much the same manner as has the business of a storekeeper in a small town...When the business was small and its owner could personally supervise all the details of the bookkeeping system he could well regard his entire establishment as a single unit, but as it grew larger and larger and he knew less and less and less of the details it became necessary for him to adopt a system of accounting which would separate the business of the various departments as they increased in number, and which would at the same time by careful, scientific classification of expense and receipt items reveal leaks, check wastes, and measure profits (National Education Association, 1912, pp. 47-48).

This intrusion of business practices in school administration was also encouraged during the early twentieth century by vogueish scientific management which “had reached the point of measuring the efficiency of the human mind as well as measuring the efficiency of the shop” (Herrick, 1996). Progressives, educational researchers and businessmen on school boards often advocated Taylorite solutions “because its emphasis on quantitative measurement fitted well with the increasingly popular belief that there was a need for “school facts as the basis for school policy”” (Lagermann, 2000, p. 79; Callahan, 1962, pp. 150-151; Butts, 1978, pp. 176-179). Taylorism offered the new profession of educational administrator a scientized knowledge base and a potent ideology for the advancement of status claims. Among the methods educational administrators practised was accounting (Callahan, 1962, pp. 152-155): “Partly for the purpose of defense and partly for the purpose of gaining status the leaders in administration claimed the label “scientific” for their accounting procedures” (Callahan, 1962, p. 247).

Deficiencies in pupil and educational record keeping were also highlighted by the school survey movement which “swept the country” during the 1910s (Heck, 1925a, pp. 60-66; Moehlman, 1924a, pp. 23-24). By 1917 125 surveys of educational provision and performance in various cities and states had been conducted by academics, education departments and philanthropic organisations (Callahan, 1962, pp. 112-120; Lagermann, 2000, p. 80; Tyack, 1974, pp. 191-193). The school survey exemplified the increasing deployment of quantitative technologies - specifically the computation of indices, scales and correlations - to the classroom and school administration (Good, 1956, p. 403). Among the early subjects to which the array of measurement techniques was applied was elimination and retardation (Strayer & Thorndike, 1913, pp. 3-76; Heck, 1925a, pp. 56-59). In *The Elimination of Pupils from School* Thorndike (1908) found that almost half of children left school before the eighth grade. In *Laggards in Our Schools* (1909) Leonard P. Ayres, Director of Education and

Statistics at the Russell Sage Foundation, confirmed the substantial number of children who left school prematurely or failed to make 'normal' progress. His work "threw an incendiary bomb" (Callahan, 1962, p. 15) into the educational firmament.

Ayres was to become a major figure in the development of child accounting. Some leading proponents of the craft contended that its modern manifestation could be dated from the studies by Ayres and Thorndike (Moehlman, 1924a, p. 23, 1924c; Ayer, 1953, p. 6; Buckingham, 1921). As a leading statistician Ayres "was always seeking new methods-new ways of manipulating figures-new chart forms" (Burgess, 1947; Breen, 1994). These included accounting. In *Laggards in Our Schools* Ayres utilised accounting references to illustrate his arguments. To comprehend and address retardation he considered it essential to collect and record facts, but in this he considered schools were seriously deficient (Ayres, 1909, p. 201). Ayres found his research frustrated by the absence of continuous records of individual pupils (Heck, 1925b). He contended that school record keeping practices were "isolated and disconnected ... There have been many day books and blotters but no ledger accounts" (Ayres, 1909, p. 201). He suggested that school reform could be activated through improved record keeping. These records would comprise a school census to identify the children who should be attending; age grade distributions to locate retarded pupils; records to monitor attendance; transfer cards to track those changing schools; and, a pupil's continuous record card to document the history of the individual from entry to leaving school. Ayres likened this record card to the systems of cost accounting and control deployed in progressive manufactories:

From raw material to the finished product each part is accounted for, each workman's responsibility recorded, and the results of each inspection are noted. That such methods are not unique is shown by the fact that most prosperous shoe concerns have similar plans by which they can ascertain the details of the shop history of each pair of shoes manufactured. The schools of our country have passed and are passing through a development as marked as that of the business world. The educational records of fifty years ago are as out of place today as the quill pen and letter press which once held sway in the counting room (Ayres, 1909, p. 210; Heck, 1925a, pp. 13-14).

Although the language of accounting had begun to infuse discourses of educational administration in the opening decades of the twentieth century Ayres "was one of the first educators to picture the school as a factory and to apply the business and industrial values and practices in a systematic way" (Callahan, 1961).³ His 'Index of Efficiency' sought to show "the relation of the finished product to the raw material" by comparing the number of children who begun school each year with those who actually completed it.⁴ He applied the

³ Another was the author of a major textbook on school administration, Ellwood P. Cubberley (Callahan, 1962, p. 152).

⁴ Ayres described the calculation of the 'Index of Efficiency' thus: "suppose we had a factory which instead of utilizing all its raw material (100 per cent) embodied only 50 per cent in its finished product. It appears that the 50 per cent is the measure of its efficiency. But suppose the plant is not economically organized. Suppose that for a theoretical product of 100 per cent it requires an organization represented by 8,000 units, but it actually comprises 9,000 units, an organization which may be represented by 8/9 or 112.5 per cent of the standard. What then is its real efficiency? Its plant is 8/9 as large as it should be theoretically. From the viewpoint of plant then the efficiency is 8/9. But its product is only 1/2 as large as it should be. From the viewpoint of product then the efficiency is only 1/2.

index to a number of city school systems and calculated the financial consequences of the inefficiencies arising from high numbers of drop-outs and repeaters (Callahan, 1961). In the years after *Laggards in Our Schools* Ayres increasingly applied the terminology and techniques of accounting to the educational arena. He spoke of an educational balance sheet which showed how the adverse resource implications of repeating and slow children might be offset by stronger, accelerating pupils. Where the number of failing pupils exceeded the number making rapid progress the books were out of balance and the cost of educating the child unit increased, much to the detriment of the taxpayer (Callahan, 1961, also 1962, pp. 165-169).

By the time that he directed “the granddaddy of all [school] surveys” in Cleveland in 1915-16 (Callahan, 1961) accounting was firmly established in Ayres’ repertoire of quantitative instruments. The Cleveland survey generated 25 reports including one by Ayres on *Child Accounting in the Public Schools*. Although he said little in his report about this new technology it clearly centred on knowing and monitoring pupils through identification, accurate recording and comprehensive enumeration, as well as locating ‘misfit’, slow, over-age children and those who otherwise departed from educational norms (Ayres, 1915, pp. 26, 39-48). Child accounting was one of a number of recommendations based on the notion that educational advancement required a more scientific and professional approach to school administration (Lagermann, 2000, pp. 83-87). *Child Accounting in the Public Schools* not only enhanced Ayres’ reputation it also deployed the term ‘child accounting’ and encouraged its wider use (Callahan, 1961; Yeager, 1949, p. 25). Following Ayres’ publication child accounting emerged as a distinctive quantitative technique in the educational arena, one intended to effectively discipline the individual pupil.⁵

Prescription and practice

Within a decade of Ayres’ deployment of the term in 1915, ‘child accounting’ was articulated as a sophisticated technology for application to the scholastic arena. Child accounting

Looking at our plant now from the two viewpoints, it is obvious that its efficiency is expressed by the product of these two fractions or $\frac{1}{2} \times \frac{8}{9} = \frac{4}{9} = 44.4$ per cent.

Now suppose these conditions are found not in a factory but in a school system. For each 1,000 children who enter only 50 per cent reach the eighth grade. The efficiency from the viewpoint of product is $\frac{1}{2}$ or 50 per cent. Moreover, instead of finding 8,000 pupils in the eight grades we find 9,000. From the viewpoint of plant efficiency is $\frac{8}{9}$ or 88.8 per cent. The figure representing the efficiency of the school system is then $\frac{1}{2} \times \frac{8}{9} = \frac{4}{9}$ or, in terms of percentages, 44.4 per cent” (Ayres, 1909, pp. 176-177, also quoted in Callahan, 1961, pp. 6-7).

⁵ It is worth noting that several of the factors identified in this section which encouraged greater quantification in record keeping practices had parallels in other arenas during early twentieth century. In medicine the emergence of new testing technologies, mass provision, the infusion of scientific management and professionalism in hospital administration transformed the medical record from the leather bound casebook to a new mode of “embodiment”- the patient centred file (Berg & Harterink, 2004; Berg & Bowker, 1997). As techniques for probing and measuring the patient proliferated the medical file became an individualised repository of patient traces often inscribed in the form of tables and graphs: “a thoroughly temporal and quantitative mode of conceptualizing the body replaced medicine’s strictly anatomical qualitative focus” (Berg & Harterink, 2004).

systems were devised which involved the comprehensive recording and reporting of data by teachers, principals, superintendents and states. The essential subject of such systems was the individual pupil. The accounting regime was focused on locating, classifying, measuring and recording diverse attributes of the school child.

During the interwar period instructional texts on child accounting were commissioned or prepared by academic specialists in educational administration, former school superintendents, and later by state departments of public instruction. The subject featured in journals on school administration. Educational authorities and teachers' associations in a number of states devised and advocated the implementation of uniform child accounting systems. 'Child accountant' emerged as a new professional nomenclature within the educational bureaucracy (Tyack, 1974, p. 184; Tyack & Berkowitz, 1977). The scientific credentials of the discipline were enhanced by its availability in graduate training programs and its pursuit by professors of education who perceived it, along with other aspects of educational administration, as a new specialism about which to teach and research (Tyack, 1976; Callahan, 1962, pp. 179-204). Professionalised school administrators, imbued with "the techniques of the business-industrial world" (Callahan, 1962, p. 244), also encouraged its diffusion.

How pervasive was child accounting in practice, particularly during the zenithal period of its prescription - the 1920s to the 1950s? Some suggested that its implementation was partial and short-lived. It had barely emerged as a definable technique when Buckingham (1921) asked "Is the once powerful tribe of child accountants passing off the scene?" The appearance of leading texts on child accounting (by authorities such as Heck and Moehlman) and the development of state-wide systems through the 1920s suggested that a positive answer to this question was premature. Although advocates such as Moehlman (1924b) observed that the general advance of child accounting had thus far been limited and remained 'primitive' in some locations, its importance and effectiveness was spreading (Moehlman, 1924a, preface). By the end of the 1920s Heck (1929a, p. 3) asserted that pupil accounting was evidently more than "another fad of a new school era".

Some insights to the implementation of child accounting are provided by the authors of texts on the subject who prefaced their work with statements indicating the application of the techniques prescribed. McAllister and Otis (1927, p. vi), authors of *Child Accounting Practice*, acknowledged the advice offered by the "numerous users" of their system, including many superintendents of city schools. Similarly, F.C. Ayer, Professor of Educational Administration at the University of Texas, referred to the wide use "in Texas and other states" of his *Articulated Child Accounting Series* which first appeared in 1933 (Ayer, 1953, pp. 1, 11-12).

More compelling evidence of the deployment of child accounting emanates from responses to the ongoing concerns of its advocates about the diverse procedures, forms and terminologies deployed in school record keeping systems - a consequence of the autonomy accorded to the often multitudinous local education authorities within each US state (Moehlman, 1940, pp. 663-666). As a precursor to persistent demands for national uniformity researchers such as

Heck (1925) set about charting the nature and extent of child accounting practices. His survey revealed that the school register was required by law in 39 of the 48 states and provisions were made for its keeping in three others (Heck, 1925a, pp. 91-93). Heck also discovered that although the obligation to keep records beyond the class register was referred to in the school codes of only 18 states, such record keeping was common in urban centres. For example in Boston and New York City pupil record cards had been adopted in all public schools for over a decade and “The continuous, individual, permanent record card is taken for granted in a city like Atlanta” (Heck, 1925a, pp. 64-65).

Heck’s survey found that schools in 54 cities of the US with a population of 100,000 or more produced 145 forms for recording scholarship data (of which 78% focussed on the individual), 102 forms relating to attendance and 159 to the family, school and personal history of the pupil (Heck, 1925a, pp. 83-85). In 77 cities in Ohio with a population of less than 100,000, 176 forms for recording scholarship were deployed (of which 86% focussed on individuals), 73 forms related to attendance and 134 to family, school and personal history. However, outside the more ‘progressive’ urban centres the advance of child accounting was less marked. A study of rural schools in Ohio revealed limited attention to record keeping beyond the register though even here approximately half of counties reported maintaining records of scholarship (Cummins, 1927).

Later surveys of the implementation of particular elements of child accounting systems confirmed the difference between urban and rural experience. During the 1930s and 40s the US Office of Education investigated the use of the cumulative record of the pupil’s scholastic career (Segel, 1938; Leonard & Tucker, 1941). The largest study was a national survey of school systems in all counties and in all cities with a population 2,500 or more. The results, which were reported in 1944, revealed that 41% of city and 18% of rural school systems deployed cumulative records. It was estimated “that at least 30 percent of the public elementary and secondary schools of the country, or nearly 69,000 schools, make use of cumulative records” (Segel, 1944). Local studies also revealed less than complete child accounting in major urban centres and much variation among schools within them. A survey of public schools in Chicago reported in 1932 that teachers were unable to supply 25% of “essential data” on the educational progress of 15,000 pupils in a particular grade (Mort *et al*, 1932, pp. 124-132).

More prevalent than the cumulative pupil record was the performance of the annual census of school age children. The census, often deemed the foundation of child accounting, was a statutory requirement in almost all states. In some the census was the basis for the issuance of more comprehensive rules relating to child accounting by departments of public instruction (McAllister & Otis, 1927, pp. 151-153; Michigan State Teachers’ Association, 1923, p. 5, 1924, p. 7; Moehlman, 1940, p. 319; Iowa State Teachers’ Association, 1927, p. 5; *Manual for Child Accounting*, 1953, p. 2). For example, in September 1925 a system of uniform child accounting which embraced the state, the county and the school district was implemented in Michigan. The administration of child accounting became a legal function of the Superintendent of Public Instruction and legislation provided for the clerical assistance necessary to keep the required records (Michigan State Teachers’ Association, 1924; Heck

1925b). Informed by the practical operation of child accounting in Michigan, the Iowa State Teachers Association (1927) sought to take the “Many excellent child accounting methods and forms now in use in schools in this state” as a basis for deploying a uniform system (p. 1; Moehlman, 1940, p. 673).

In the state of New York laws on compulsory education required that a census of school age children be taken and registers of attendance kept. An Attendance and Child Accounting Division was established to receive reports, track pupils and oversee the census. The state established a rule that school principals and teachers would keep suitable records of pupil attainment (Mosher, 1933, pp. 51-52). A Division of Child Accounting and Research was similarly created in Pennsylvania in 1936 and manuals were issued to assist teachers and officials in their completion of prescribed forms (*Manual for Child Accounting*, 1953).

By 1940 Moehlman (p. 672) argued that although “Child-accounting activity suffers from acute organizational malnutrition in most of the state departments of education” there was steady progress in Pennsylvania, New York, North Carolina, Virginia, Louisiana, Michigan, Indiana, Ohio, Wisconsin, Iowa and California. He reflected “Despite current deficiencies, a large improvement has been made in the state education authority’s attitude toward the child-accounting activity if the long view is taken” (p. 673). At local level there was also variation in the use of particular records but in a high population of school districts child accounting divisions had been established and organisational hierarchies instituted to perform the function in larger schools (pp. 321, 334-335).

During the 1950s the State Board of Education in Minnesota was required by statute to provide a uniform system of records for use in public schools in order to locate, count and monitor school children. Instructions were provided to personnel at all levels of the educational hierarchy and the requirement to keep accurate and complete records was forcibly stated. The State Board of Education provided blank forms and record books for use by teachers and school administrators. In consequence it was asserted that “Thousands of persons in Minnesota record child accounting facts at their schools, process the data, and compile reports. School personnel constantly refer to these records and reports in their day-to-day work as teachers, counsellors, nurses, administrators, and others” (*Manual of Instructions*, 1955, p. 14). Similarly, in North Carolina (1954) a highly prescriptive uniform child accounting system was also implemented by the State Board of Education.

The extent to which child accounting was enthusiastically deployed undoubtedly varied among states, districts, schools and teachers. While, for example, the Principal of Central High School, Charlotte, North Carolina observed that “Pupil accounting has become an important function in our school and is comparable to the accounting for each item of merchandise or material in the store or manufacturing plant” (Garinger, 1940), less ‘progressive’ institutions were cynical about its merits and adopted a minimalist approach to record keeping. Given their pivotal role in collecting, recording and reporting data the often ambivalent attitude of front-line teachers toward child accounting was a concern for its advocates (Heck, 1925a, p.187; 1929a, pp. 455-463; Davis, 1948, pp. 375-378). It was acknowledged that many teachers, untrained in the technique, performed child accounting “in

a more or less half-hearted way” (McAllister & Otis, 1927, p. 2). Other evidence suggested the opposite. One study published in 1939 indicated that high school staff consulted child accounting records frequently, particularly those which pertained to pupil performance (Boyer, 1944). However, as Goslin and Bordier noted as late as 1969, the absence of major studies of the practice of pupil record keeping ensured that drawing conclusions about the extent to which individual teachers and administrators actually used child accounting records was “practically impossible” (p. 49).

By the time Goslin and Bordier offered this view child accounting was no longer in vogue in the US. The quantitative-bureaucratic phase in educational administration had passed. Child accounting increasingly assumed a more enabling function and was associated with guidance or pupil-personnel work – defined as facilitating “the maximum development of each individual through education” (Shear, 1971; Ayer, 1953, pp. 7-8). After the focal period of the current investigation child accounting tended to concern studies of the school population with a view to social amelioration, investigating delinquency and educational and community planning. Although its functions and objects mutated elements of the originating technology did persist. Following consultations with various educational associations the US Office of Education issued a guidance handbook in 1964 on *Pupil Accounting for Local and State School Systems* (Goslin & Bordier, 1969, p. 40). A revised edition, *Student/Pupil Accounting* (Putnam, 1974), was commissioned by the US Department of Health, Education and Welfare and was produced following inputs from accountants Ernst & Ernst and consultations with numerous educationalists. This manual espoused a standard terminology and urged the implementation of accounting information systems by those agencies describing and making decisions about students at federal, state and local level (Putnam, 1974, pp. iii-iv).

The Pennsylvania Department of Education continues to maintain a child accounting database which records information about pupils in the 501 school districts of the state, mainly with a view to informing the allocation of state subsidies. Detailed records including student profiles are kept in schools by over 500 members of The Attendance/Child Accounting Professional Association of Pennsylvania. Since the passing of the No Child Left Behind Act by the federal government in 2001 the child accounting database in Pennsylvania has been used to report performance data analysed by race/ethnicity, economic disadvantage, migrant, English language learner and special education statuses (School Attendance/Child Accounting, 2008). In other states, such as Michigan, pupil accounting systems perform similar functions and its practitioners are represented by a professional association (MPAAA, 2009).

Child accounting as an instrument of disciplinary power

In this section child accounting texts are analysed by reference to Foucault’s instruments of disciplinary power - individualisation, continuous hierarchical observation and normalising judgement. These mechanisms of coercion operated on different subjects in different institutional settings. They were at their most exhaustive and conspicuous in the prison with its emphasis on the detention, punishment and correction of the criminal (Foucault, 1991a, pp. 231-256). They could be more subtle in relation to the treatment of a hospital patient. As

illustrated earlier, many of Foucault's historical illustrations of "the means of correct training" were drawn from the educational field (1991a, p. 170). And here we explore the likely potency of disciplinary instruments directed at the school-child in an instructional setting, instruments which fell under the rubric of 'accounting'.

It is shown that individualisation was central to child accounting technique and its capacity for generating disciplinary responses. In child accounting the individuated pupil-child was constituted as the 'case'. The child's capacity, defects, behaviour and conduct were subsequently rendered visible through instruments of hierarchical surveillance which focussed on inscription in accounting forms and books. Child accounting involved making comparisons of the physical and mental characteristics and performance of the individual pupil with norms, particularly those represented on charts and scales. In this way child accounting enabled the exercise of normalising judgement.

Individualisation

"The child is the important unit to consider in child accounting". So stated the *Manual of Instructions* on uniform child accounting issued by the Department of Education in Minnesota in 1955 (p. 16). Through the instrument of child accounting the pupil was constructed as the essential subject. From the outset leading advocates of child accounting argued that in the context of mass educational provision individual differentiation and microscopic analysis were essential. In his originating work, *Child Accounting in the Public Schools*, Ayres contended: "The problem of the over-age and slow pupil can only be solved by caring for the individuals who make up the mass. This involves the use of an effective system of child accounting" (1915, p. 67). In the 1920s contrasts were drawn between the late nineteenth century emphasis on aggregate educational statistics and the modern focus on the individual in child accounting (Moehlman, 1924a, p. 22). By the 1950s it was firmly established that "If the school system has one thousand pupils, it should have one thousand sets of records, that is, a set for each pupil" (Reeder, 1958, p. 556).

The emphasis on the individual in child accounting accorded with pedagogical thinking during the early twentieth century, especially after World War One. Much was made of the "concept of the "child-centered school" and "individualized education" whereby the pupil, the focus of the educational programme, was to be systematically and temporally monitored (Ayer, 1953, p. 5; Davis, 1948, p. 1). Educational psychologists argued the importance of recognising individual difference (Butts, 1978, p. 204; Davis, 1948, pp. 18-19; Yeager, 1949, pp. 43-44; Tyack, 1974, p. 181). The Progressive Education Association called for "the freest and fullest development of the individual, based upon the scientific study of his mental, physical, spiritual, and social characteristics and needs" (quoted in Butts, 1978, p. 208). During the 1930s it was asserted that "The need for giving greater recognition to the individual has become an axiom in teaching" (Otto, 1934, p. 14; Mort *et al*, 1932, pp. 8-9). Child accountants drew on the findings of educational psychologists which revealed that school children had widely differing degrees of ability. In consequence, teachers needed to "know the facts about such differences" (Heck, 1925a, p. 19):

...if we are to provide adequately for all children we must have an accounting for each child which will give his teacher an intimate and accurate picture of his abilities, capabilities and desires. This involves knowledge of his weakness as well as knowledge of his strength. In terms of financial accounting one might say that these debits and credits are entered upon his record sheet, a balance is struck, and the child is aided in doing his best with that balance (Heck, 1929a, p. 5).

In order to address educational development in the child-centred school it was necessary to “draw up a balance sheet for each individual, upon which we can record in objective terms the strengths and weaknesses, the peaks and valleys, of his physical, mental, and social capacities, whether these be matters of his inheritance or matters of his experiences, knowledge, and skills” (Ruch & Segel, 1940, p. v).

For Heck (1929a, pp. 7-9) this emphasis on amassing knowledge of the child was an extension of the wider recognition that comprehending the individual was a prelude to prescribing action. Employers in large business organisations required data about each employee. Social workers and psychotherapists focussed on preventative and constructive remedies based on comprehensive knowledge of ‘the case’. Reviewers of Heck’s (1929a) work agreed that “The almost universal acceptance of the doctrine of individual differences and the widespread reorganization of education to serve more effectively varying individual needs make essential more refined techniques of child-accounting which take account of qualitative as well as quantitative differences” (Taylor, 1930). Moehlman (1924a, pp. 11-17) also observed that the focus on the individual child was aligned to the manner in which numerous other institutions such as the family, the state, the church, and economic and social agencies, practiced forms of “individual accounting”. Individuation was also associated with social efficiency. One high school principal in Massachusetts considered that “An efficient school...will measure and account for every child, providing different opportunities depending on his or her needs” (Tyack, 1974, p. 190).

Thus, for leading child accountants individualisation was fundamental: “The basic principle underlying the organization of a state-wide child accounting system is the educational need for a permanent and continuous record of every child” (Moehlman, 1924a, p. 59; 1940, p. 327). This became a precept in the development of state-wide uniform child accounting systems (Michigan State Teachers’ Association, 1924, p. 7).⁶ Without the individualised record “the teacher is in the same position as a doctor treating a patient without knowledge of his previous social, physiological, and medical history” (Michigan State Teachers’ Association, 1923, p. 17). A phrase much employed to explain the bookkeeping function of child accounting was the importance of ‘keeping track’ of individual pupils (Heck, 1929a). For some this function was elemental to the practice: “Child accounting is the activity concerned with those records, reports, and services that are used in locating children, in counting and classifying children, in “keeping track” of children, and in recording their progress” (*Manual of Instructions*, 1955, p. 13).

⁶ Moehlman chaired a committee of the Michigan State Teachers’ Association (1923, 1924) which investigated and proposed a state-wide system of uniform child accounting.

The most ardent explication of the centrality of individualisation in child accounting was offered by McAllister and Otis (1927). In their *Child Accounting Practice*, a work which “set a standard of excellence” in the field (Heck, 1929b), the authors lamented the extent to which programmes of mass education tended toward the neglect of the singular pupil. Their objective was to offer an accounting system which kept “each individual pupil clearly in mind” (McAllister & Otis, 1927, p. v). Child accounting was predicated on the notion that “our teachers are not teaching classes – they are teaching pupils...the education of the children of the community is the education not of groups, but of pupils within groups” (p. 3). Hence the “fundamental principle of child accounting is that the child is the unit of accounting” (p. 68), the child was the “primary subject” whose identity would be maintained as data was inscribed, abstracted and disseminated through the administrative hierarchy (McAllister & Otis, 1927, pp. 5, 11-12). Thus the organising analytic of the monthly report produced by the teacher for the school principal was not to be time (the day) but the subject (the child) (McAllister & Otis, 1927, pp. 101-102).

In fact it was its capacity to render individuated detail conspicuous which made accounting an appropriate quantitative instrument in the scholastic arena. As applied to business accounting permitted a comprehensive knowledge through its macro and microscopic emphases – beneath the panoramic offered by financial statements lay detailed revelations of the minutiae of individual transactions and accounts. According to Heck (1925a, p. 78) in child accounting “A sharp distinction” was necessary between records and reports: “The latter usually summarizing data concerning a group of pupils; the former in all cases record data which refer to individuals and are permanent and often cumulative” (also Drager, 1940, p. 29). Although child accounting comprised a plethora of records and reports for distribution and retention through the educational bureaucracy it was the record of the individual pupil which was at the heart of the system (Ayer, 1953, pp. 8-9, 20). Thus a separate account was to be kept for each pupil. Further “In good accounting there must be a record of daily transactions (daybook entries) and then a posting to a journal or to a ledger...You will find it interesting to compare the job of accounting in your school system with the job of accounting in a mercantile establishment having an equal number of accounts” (McAllister & Otis, 1927, p. 2). The potentially unwieldy mass of data created by this approach encouraged some to argue that record systems “have been individualized too far” and that the child had become so minutely dissected that it was difficult to put her/him back together again (Heck, 1925a, pp. 139-140; Flory, 1936).

Accounting was also deemed appropriate to the educational domain because its inherent control procedures (such as balancing “the child account”) reduced the risk of ‘losing’ individual pupils and also guarded against errors or inaccuracies in their records (McAllister & Otis, 1927, pp. 32, 162, 185). Accounting also enabled the disciplining of the individual through comparisons with group norms. “Educational bookkeeping” not only involved recording details of the individual but also permitted the determination of totals, ratios, averages, relationships and effects by reference to which individual performance could be assessed (McNicholas, 1931, pp. 4-5). Other educational administrators emphasised that detailed records rather than mass statistics were necessary for the careful “handling of human

souls”, and child accounting offered this potential (Courtis, 1924). Securing compulsory attendance, monitoring educational performance, addressing issues such as retardation and making adjustments to individual needs demanded the identification of each pupil. The front-line teacher “requires all the information it is possible to secure about the individuals under her charge in order that the classroom program and method may be better adjusted to meet the individual differences that exist in every graded group” (Moehlman, 1924a, p. 55).

Compared with other types of record keeping such as the informal and unbounded narrative of the casebook and the narrow scope of the school register (Berg, 1996; Berg & Harterink, 2004), the collection and recording of diverse data in order to ‘know’ the pupil was achievable most efficiently through the deployment of accounting. Its forms and processes provided the opportunity to inscribe comprehensive data in a way that was unambiguous, concise, bounded and structured.

Continuous hierarchical surveillance

For Foucault (1991a, pp. 170-177) the expansion and re-organisation of mass elementary schooling necessitated the introduction of surveillance in the classroom. Both the supervised and the supervising in the scholastic arena were locked in a field of disciplinary power. The school became a human observatory in which instruments for the continuous hierarchical observation of pupils became a key feature of pedagogic activity. Specialised personnel emerged to operate surveillance systems. In this connection Foucault specifically refers to the records of errant pupils kept by monitors and observers. Here our concern is with the later instrument of child accounting as advocated and performed by teachers and administrators during the first half of the twentieth century. The focus is on the way in which those with power created knowledge about individualised pupils through the continuous disciplinary gaze of monitoring, writing and recording.

The surveillant instrument of child accounting featured the inscribing of quantitative and qualitative data about the pupil-unit on media such as printed cards, forms, reports, charts and diagrams in a way which rendered each individual “calculable and manageable” (Rose, 1988). Child accounting enabled the continuous and hierarchized gaze of the pupil through the written record. For advocates such as Moehlman (1924a, p. 17) the technology was but one manifestation of the “world of records” which pervaded individual existence in modernity and which was essential to the preservation of social order and the pursuit of progress. Moehlman perceived child accounting as the principal form of record keeping relating to individuals during the early lifecourse - from the ages of five to twenty years. Child accountants also made the distinction between recording - inscribing direct observations about individual children (primarily by teachers), and reporting - the communication of data through the administrative machinery (McAllister & Otis, 1927, p. 12). Recording constituted “the major part of child accounting” (McAllister & Otis, 1927, p. 146) and permitted the instant surveillance of the current status of every pupil by anyone in the observational bureaucracy (McAllister & Otis, 1927, p. 61).

Child accounting was *hierarchical* in its design and operation. In the context of compulsory education each state was required to account for every child falling under its protection and to “know what is happening to the children entrusted to its care” (Moehlman, 1924a, p. 41). Hence, the accounting instrument was actualised through a hierarchy comprising the state, county, local school district, school superintendent, principal, teachers and parents (*Manual of Instructions*, 1955, p. 13).⁷ The key operator of the panoptic gaze was the classroom teacher, the party in direct, everyday contact with the school child (Heck, 1929a, pp. 457-458; Ayer, 1953, pp. 153, 170). It was the teacher who “must have an intimate knowledge and practical acquaintance with her pupils. She needs to know their health conditions, experiences, habits, abilities, interests, attitudes, and temperaments. Without this information she cannot hope to guide them intelligently in their activities” (Reinoehl & Ayer, 1940, p. 50).

Gaining an intimate knowledge of every child required that teachers were possessed of “good observational methods”, a skill deemed “of vital importance to the entire field of child accounting” (Ayer, 1953, pp. 167-170). Accumulated observations and facts had to be recorded and teachers, as the chief writers, keepers and users of child accounts were expected to be familiar with forms of narrative, numerical and graphical representation. The reporting regime attending data kept by the teacher also helped enmesh the pupil in a disciplinary nexus. The disclosure of individualised data in the classroom or school, the discussion of results by teachers with their pupils, and teachers’ periodical reporting of pupil performance to parents, left little doubt in the mind of the child subject that the incessant collection and recording of information about attendance, skills, tests and character assumed a corrective function (McAllister & Otis, 1927, pp. 16, 65-66; Ayer, 1953, pp. 23-24).

It was also considered that the dramaturgy of recording might confirm to pupils that their performance and traits were being monitored and this would condition “the things pupils talk about among themselves and at home” (Boyer, 1944). Inscription could be a more potent device than other means of communication in the classroom: “in school, what you record looms larger than what the teacher says is important” (Boyer, 1944, *emphasis in original*). It was recognised that this disciplinary power could also be enhanced by the pupil participating in the writing of her/his own record (thus compounding cognisance of defects and capabilities) and by keeping that record “in a file at the front of the classroom for convenient reference”. In this way “pupils are shown their progress as recorded on their charts and are encouraged as soon as able to take over the work of entering new data on them” (Findley, 1944).

Ahead of classroom teachers in the surveillance hierarchy were school principals and/or administrators who maintained the local child accounting records. Although child accounting agencies could be established at district and state level (Moehlman, 1924a, pp. 64-66) of

⁷ Although the focus was on the individual pupil the analytical reports generated from child accounting data also provided a mechanism by which educational administrators in local districts could be monitored by states, school principals by districts and teachers by principals (see Moehlman, 1924a, pp. 39-53, 1940, pp. 328-336, 670-672; McAllister & Otis, 1927, p. 13; Heck, 1929a, pp. 134-136).

particular importance was an information collection agency within the school - "The child accounting department bears the same relationship to school organization as the stomach to the body. Into it is poured all the information from the entire school system, and here it is sorted, digested, and analyzed for the benefit of the school board, superintendent, and principal" (Moehlman, 1924a, p. 48).

At the school level child accounting records permitted the swift identification and location of pupils, provided the capacity to know, evaluate and judge them, and were a basis for classification and action-taking (Ayer, 1953, pp. 19-21). Beyond the individual school the school district was responsible to the state for the children resident within its boundaries and maintained its own child accounting records (Moehlman, 1924a, p. 42). The individual's performance was also visible from the apex of the administrative hierarchy (Miller & O'Leary, 1989). At the level of the state a child accounting division would "keep accurate and complete records of the educational status of every child of school age within the state" (Moehlman, 1924a, p. 60).

Its proponents argued that child accounting would also permit the *continuous* observation of the pupil. It would provide a comprehensive, cumulative and permanent record of the subject and this contrasted with the intermittent temporal tracings of pupil progress offered by extant systems of school record keeping (Iowa State Teachers Association, 1927, pp. 2-3). The principle of continuity was often extolled by child accountants. Moehlman argued that for pupil records to be of "greatest value" they "must be continuous" (1924a, pp. 55, 59). He later asserted that "Child accounting, by definition, is the keeping of the essential records of the individual's activities during his pre-school, school, and post-school life" (1940, p. 314). Ayer (1953, p. 87) concurred that "a pupil's record should be continued year by year and follow him all the way from the first grade up to the twelfth grade and perhaps on out into his future educational, industrial, or professional life".

For Heck (1940, p. 480) the community should provide "an exact accounting of every child" from birth until the age of majority. Neither should the record necessarily be discontinued at the end of the scholastic career (*Manual of Instructions*, 1955, p. 13). Like Ayres before him, Heck returned to the analogy of the shoe factory to assert the importance of continuity. It was crucial that a continuous record be maintained of the child product as it moved through the manufacturing process:

If it is important that a history be kept of each shoe unit that is manufactured, how much more important is it that each child who passes through the public schools shall have a complete history of himself kept? The shoe record is made largely for the sake of determining the efficiency of the employee; the product itself can seldom be improved. The record of the pupil has as its chief objective that of ultimately improving the pupil (1929a, p. 134).

The historization of the child was to be total. McAllister and Otis (1927, p. 5) contended that their complete child accounting system was devised to render visible the "attendance, scholarship, morale, character and health" of the pupil from "day to day, from month to month, and from year to year". Continuous observation was to be spatial as well as temporal.

Pupil migration between schools, districts and states would be captured through transfer forms to ensure that no child was ‘lost’ and to identify any pupils ‘gained’ (Moehlman, 1924a, pp. 67-74; Michigan State Teachers’ Association, 1923, pp. 8-10, 1924, pp. 11-14; Iowa State Teachers Association, 1927, pp. 32, 37-54; Ayer, 1953, pp. 200-205). Extensive controls were implemented to ensure that the continuous gaze was not fractured by, for example, the move of a pupil from one school to another or the transition from elementary to high school (Ayer, 1953, p. 64; McAllister & Otis, 1927, pp. 30-43).

Instruments of Surveillance

The continuous surveillance of the individual pupil under child accounting systems commenced with an instrument to locate and monitor the child in both time and space - the school census. The annual census was a fundamental component of the child accounting regimen. Its object was to identify all children of school age in the district. It constituted the “initial count” in the series of accountings to which children were subjected (Ayer, 1953, p. 26). Some child accountants likened the census to a merchant taking a physical inventory (McAllister & Otis, 1927, p. 152). In states such as New York, Michigan, Pennsylvania and Minnesota detailed procedures were issued by child accounting and attendance divisions of education departments to ensure the efficient conduct of the enumerative exercise and the effective use of its results (Sullivan, 1918; Mosher, 1933, pp. 5-14; Michigan State Teachers’ Association, 1924, pp. 15-24; *Manual for Child Accounting*, 1953, pp. 2-9; *Manual of Instructions*, 1955, pp. 39-56). Importantly, in contrast to censuses of population which generated reports containing abstracted data and mass statistics, the school census was disaggregated to focus first on family and then on the individual child (Ayer, 1953, p. 27; Drager, 1940, pp. 8-17; McAllister & Otis, 1927, p. 148).

(FIGURE 1 ABOUT HERE)

The school census involved enumerating the names, address, ages, birth dates, educational status, nationality and physical defects of all members of a family on a “field sheet”, principally to identify those of school age (see Figure 1). The details on the family census sheet were used to map the location of children in the school district and construct a permanent and continuing record of the individual’s education. On the census card/form would be inscribed the child’s name, address, date of birth, names and nationality of parents, school attended, first language and any physical defects (Michigan State Teachers’ Association, 1924, p. 19; Moehlman, 1924a, pp. 80-88). The Census Registration Card recommended by Ayer in 1953 (pp. 27-33, 39-45), which is reproduced in Figure 2, also contained information about race and emphasised the searching out and recording of “home conditions” in order to truly know the pupil and comprehend his social as well as educational development.⁸ The ‘Individual School Census Card’ element of the North Carolina (1954, pp.

⁸ Racial segregation in public schools was common during the period studied. In fact in 1951 it was a legal requirement in 17 (primarily Southern) states (Good, 1956, p. 535). In *Brown v. Board of Education*, 1954 the US Supreme Court ruled that the practice was unconstitutional but desegregation was not always subsequently implemented (Patterson, 2001; Tyack, 1974, pp. 279-281). Child accounting prescriptions emanating from Southern states *circa* the judgement in *Brown v Board of Education* (such as Ayer (1953) of the University of Texas, and North Carolina (1954)) commonly included the collection of data about race. The extent to which the

51-52) child accounting system also identified whether the child was White, Negro or Indian and also whether s/he was deaf, blind, crippled or feeble minded. Those classified as deaf, blind or mentally incompetent were to be educated in specialist institutions (1954, p. 8).

(FIGURE 2 ABOUT HERE)

For Moehlman (1924a, p. 81) the continuous surveillance offered by the censal instrument was key: “The great value of the annual tabulation of child age-groups lies in its continuity, and it is therefore necessary that the school census be continuous. By a continuing school census is meant an uninterrupted and constant individual record of every child between the ages of five and twenty-one years, made originally from a head count and checked constantly against membership and attendance in the schools of the district” (also Michigan State Teachers’ Association, 1923, p. 12, 1924, p. 15). A good census program involved “a constant vigil throughout the year to acquire the essential data needed for the school records of each child” (Drager, 1940, p. 15). Ayer (1953, pp. 32-33) reported that there was a movement in several cities to venture beyond periodic counts towards the deployment of a continuous school census whereby groups of field workers vigilantly “keep track of moving and migrating children” and therefore generate data which is “complete and immediate”.

Another device of continuous observation within the orbit of child accounting was the school register. Whereas in the nineteenth century the teacher’s register had expanded in scope and was the principal record of the individual pupil, in child accounting systems it was primarily concerned with attendance. Like the census it monitored the physical child in time and space. As such it remained an important component of the surveillant regime. For example, the Attendance and Child Accounting Division of New York State reminded teachers in the 1930s that school registers would be examined and rated biannually because it was “a most important book of account. It accounts not for money directly, as do most account books, but for time, the time of children, in school and out” (Mosher, 1933, p. 20). An indication of the spatial and temporal scope of child accounting is offered by the deployment of a ‘Pupil Transportation Accounting Sheet’ in New York State to monitor the child’s journey to school (Mosher, 1933, p. 75). It was provided that in rural areas where distances to school were long even “the bus-driver may be included in the child-accounting personnel” (Moehlman, 1940, p. 331).

More prominent than the register in child accounting systems was the all-embracing cumulative pupil record. The pupil record featured under various guises in all child accounting systems (Ayer, 1953, p. 8). Unlike the register it comprised a separate document for each child and became the principal medium for the continuous monitoring of her/his educational, physical and social progress. It was the “result of a study of the individual as well as a means of studying him” (Allen, 1944; *Manual of Instructions*, 1955, p. 61). The emergence of the cumulative record has been attributed to the recognition in educational circles during the late nineteenth century that “the individual child had been somewhat lost

‘tracking’ procedures of child accounting were deployed as techniques to activate desegregation or maintain segregation (before and after *Brown v. Board of Education*) is worthy of separate investigation (Patterson, 2001, pp. 139-140, 165).

sight of in an endeavour to secure consistent data on groups of children” (Heck, 1925a, p. 136). In the early years of the twentieth century cards were introduced for each pupil in the public schools of New York City and Boston, before such documents were characterised as child accounting. They were further developed and endorsed by the National Education Association following a survey of school superintendents in 1910 which revealed unanimous support for the introduction of cumulative record cards for inscribing the school career of each child (Heck, 1925a, pp. 67-74).

This continuous record followed the individuated pupil as s/he progressed from grade to grade and school to school. It provided a comprehensive educational history and means of knowing, appraising and disciplining. The record was to be “always available to teachers and other school officers interested in the pupil’s welfare” (Ayer, 1953, p. 8). For Moehlman (1924a, pp. 55-58, 88-89) this fundamental record was a six-page, cumulative record of the child’s whole scholastic career. On it was inscribed an account of marks obtained in achievement and mental tests, grade progress, details of physical development, social or home conditions, emotional characteristics, personality traits, ideals, and vocational aptitudes or tendencies. The record, as deployed in the state system of uniform child accounting implemented in Michigan in 1925, is reproduced in Figure 3 (for Minnesota see *Manual of Instructions*, 1955, pp. 62-69).

(FIGURE 3 ABOUT HERE)

According to Ayer (1953, pp. 8-11) child accounting centred on a Pupil’s Cumulative Record (and supplements thereto). The Pupil’s Cumulative Record was designed to provide teachers, principals and administrators with a complete record of the child’s educational history from the point of entry to the school system to departure from it. The record “keeps track year by year of the important facts of a pupil’s growth and development. It is the most important of all the record forms and ... follows the student from grade to grade” (Ayer, 1953, p. 48). The Pupil’s Cumulative Record detailed race⁹ and parentage; home and family conditions; attendance record; scholarship data; test results; physical health, growth, weight and defects; behaviour and social adjustment; extracurricular activities; distinctions; recommendations and other comments. It also provided for the inclusion of means of identification such as a photograph, finger-print or description of eye or hair colour (Ayer, 1953, pp. 48-63). Ayer’s Pupil’s Cumulative Record was a source for the construction of the Permanent Office Record (of the pupil kept by the school principal or superintendent) and the Pupil’s Report Card (to parents) (Ayer, 1953, pp. 112-130).

Whereas entries were made in the pupil’s cumulative record on a periodic basis it was to be supplemented by a more continuous instrument of surveillance. Moehlman, and some other child accountants, prescribed that teachers maintain a daily record or journal in which to note observations about the performance and conduct of pupils as well as their attendance or absence. In 1920s Michigan the Teacher’s Class Record Book, considered “second in importance to the cumulative individual card in the accounting record”, performed this

⁹ In completing details on race the accountant was to enter “white, black, yellow, brown, or red” (Ayer, 1953, p. 50).

function (Michigan State Teachers' Association, 1924, p. 33; also Iowa State Teachers Association, 1927, p. 17; *Manual of Instructions*, 1955, pp. 59-60). For McAllister and Otis (1927), authors who most forcibly espoused individualised child accounting records, the Pupil Cumulative Record was supplemented by a Pupil Daily Record (and Test Record) (see Figures 4 and 5), a Character and Health Record, a 'Pupil Tracer' and a Teacher's Report containing the class roll. These documents were to be utilized by a hierarchy of personnel comprising teachers, the principal, the school superintendent and medical officers in order to secure a comprehensive knowledge about the child.

(FIGURES 4 AND 5 ABOUT HERE)

Whereas the Pupil Cumulative Record contained information about attendance, scholarship and mental and physical growth the Character and Health Record focussed on the child's body and soul. It offered scope for periodic monitoring of ten character traits (including honesty, courage, obedience, industry and thrift), each rated on a scale of 1-5 to be used to construct a character profile and changes therein. The teacher's determination of the rating for each trait required that all aspects of the pupil's behaviour be observed, from care of books to social interaction in the playground. This document also contained a record of diseases and serious ailments and the results of physical and dental examinations and treatments administered. Here, particular attention was devoted to the identification and recording of "defects" (McAllister & Otis, 1927, pp. 90-95). McAllister and Otis' (1927, p. 169) 'Pupil Tracer' form was an additional individualised administrative device which served to track "the pupil wherever he may be in the school system and wherever he may reside in the school district".

As the foregoing suggests the architects of child accounting systems recognised that the scope for data collection on pupils was practically boundless. There were "thousands of different items of information concerning a pupil's status, growth, and development that might be recorded" (Ayer, 1953, p. 11). Numerous supplementary documents could be amassed and were invariably deployed in the school systems of many large cities (Ayer, 1953, pp. 10-11; Heck, 1925a, p. 119; Strayer et al., 1927). In his investigation of the child accounting records kept by 131 US cities with a population in excess of 100,000 and less than 100,000 in Ohio, Heck (1925a, pp. 114-124, 199-218) discovered that 1,515 different items were recorded on child accounting forms relating to individual pupils (also Goslin & Bordier, 1969, pp. 41-42). These most frequently concerned performance, medical status, physical condition, personal history and habits, and home life. Although Heck's research indicated that only 76 data items were of "universal significance" it also revealed the extent of hierarchical observation. Among the items he found being recorded was the number of movies watched by the child at night, sexual immorality among family members, number of meals consumed, proclivity of fingernail biting, frequency of bathing, number of toilet requests, and whether the child was possessed of a clean face, shoes and pocket handkerchief (Heck, 1925a, pp. 115-116, 157; also Ayer, 1953, pp. 11-12). Similar investigations of specialist institutions such as Catholic elementary schools revealed data collection on matters such as dates of baptism, First Communion, confessional and regularity of attendance at Sunday Mass (McNicholas, 1931, p. 73).

Normalising judgement

Foucault emphasised the way in which disciplinary power is exercised through the evaluation of conduct or performance by reference to standards and norms. In this respect techniques of measurement are essential to the capacity to compare, differentiate and discipline. In the corporation techniques such as standard costing established economic norms by which individual actions could be evaluated and governed (Miller & O'Leary, 1987; Miller, 2001). Techniques of child accounting enabled the same function in the school by reference to standards of mental ability and physical growth. The measurement regime of child accounting located the individual pupil in a normative field, encompassed the codification of difference and facilitated administrative responses to deviation.

For Rose (1988) the psychological intelligence test, which featured large during the age of quantification in American education, represented an important innovation in normalization. Whereas the identification of individual difference had hitherto depended substantially on locating physical evidences on the body, human variability was now made visible and assessable through the statistics of the normal distribution. The ability of the object child could be located by proximity to the track of the normal curve:

A developmental norm was a standard based upon the average abilities or performance of children of a certain age at a particular task or in a particular activity. It thus not only presented a picture of what was *normal* for children of such an age, but enabled the normality of any individual child to be assessed by comparison with this norm (Rose, 1988, *emphasis in original*).

Child accountants were of a similar view. Ayer (1953, p. 99) commented that the way in which psychological and educational measurements indicated that individual results tend to be distributed in a normal or bell-shaped curve was “Probably the most significant statistical discovery of modern times”. It enabled judgements to be made about the ranking and classification of individual pupils on the basis of performance. Such rankings and classifications had behavioural implications – they could inspire improvement or de-motivate (Heck, 1929a, pp. 434-453).

Analysing the results of pupil tests in the context of national, state, district and/or school norms featured large in US child accounting systems devised in the first half of the twentieth century. Testing regimes distinguished raw from derived scores, the latter being “a numerical description of a pupil’s performance in terms of norms” (Ross, 1941, p. 297). Graphical representations were extolled for the striking way in which they revealed weak and strong pupils by reference to averages (Ross, 1941, pp. 269-272). While some progressive educationalists objected to the comparison of pupils with norms, an alternative of “comparing each child with himself, with his past record, and with his potentialities” effectively pointed to a disciplining of the self (quoted in Ross, 1941, p. 321).

As shown in the previous section child accounting was continuous and comprehensive. Numerous dimensions of the individual pupil’s existence were measured and inscribed. The revelations obtained for individuals and groups could be compared, judged, classified by

reference to standards, normal distributions and scales, and deviants were revealed. As one commentator noted, among the virtues of child accounting was its capacity to bring “to attention child abnormalities” (Drager, 1940, p. 64). The individual cumulative record was lauded for its capacity to reveal the gifted or slow pupil, and those with special abilities or disabilities (Kawin, 1944). Moehlman (1924a, p. 97) offered an insight to these identifying processes in relation to his ‘Age-Grade Summary’ (see Figure 6). Following an annual survey of the chronological age and the grade classification of children in each school district “the child is entered in the square where age and grade columns meet ... Children to the right of the heavy line are one or two years retarded, depending upon their location, and three or more years retarded if in the stippled area. All children to the left of the black line of in-grade-at-age are accelerated one, two, or three years, depending upon the square in which they are located”.

(FIGURE 6 ABOUT HERE)

Once compared with the norm a range of classificatory labels could be applied to the pupil such as ‘advanced’, ‘normal’, ‘retarded’, ‘slow’ ‘laggard’, ‘dull’, ‘failed’ ‘illiterate’ and ‘delinquent’ (see Drager, 1940, chapter 4). The Strayer-Engelhardt child accounting system of 1927 specifically included a ‘Pupil Classification Card’ which, in addition to recording background data, focussed on the identification of departures from norm. These were codified as special attributes, weaknesses, immaturities, irregular features in the pupil’s history, subject areas where the student was in the best or worst cohort, physical features and exceptional performance in intelligence tests (see Figure 7). Once classified, appropriate promotional or corrective action was prescribed by the powerful (teachers, parents, principals, administrators) or encouraged in the child self.

(FIGURE 7 ABOUT HERE)

Individual records of physical growth, attendance, illness, performance in tests could be evaluated by reference to class, school, district, city, state or national norms. In New York State the Attendance and Child Accounting Division encouraged teachers to compare the records of pupils in the school register with averages and medians to identify and address absenteeism and tardiness (Mosher, 1933, pp. 21-23).

In the *McAllister-Otis Child Accounting System* the ‘Test Record’ of individual pupils offered scope for inscribing the extent to which the pupil’s ‘grade status’ was above or below that expected, comparing the child’s test score with classmates, the “norm” for his/her age group and national performance levels (McAllister & Otis, 1927, pp. 48-49). Further, once or twice per year the pupil’s ‘Mental and Educational Growth Chart’ would be prepared. As illustrated in Figure 8, this plotted the results of periodic tests to ascertain the child’s mental age as well as scores in attainment tests to determine educational age. Performance could be evaluated by reference to a pre-printed curve of “an individual exactly normal” (McAllister & Otis, 1927, p. 54). Thus “Any pupil ... whose mental growth [and educational growth] curve lies above this line is brighter than normal, and similarly any pupil whose mental growth curve lies below this line is duller than normal” (McAllister & Otis, 1927, p. 54). When combined with

other data the ‘standing’ of the individual pupil was classified as “superior”, “high”, “normal”, “doubtful” or “failing” (p. 59), or as “advanced” or “retarded” (McAllister & Otis, 1927, p. 132). In the case of the former, action would be taken to promote the achiever. In the case of the latter the causes of poor performance were to be identified (such as mental incapacity, illness, physical defects, indifference and attendance) and remedial action taken. McAllister and Otis’ ‘searchlight survey’ instrument, in which all the Teacher’s Monthly Reports for a school were laid out side by side, also permitted the “observing superintendent or principal” to compare and identify “unsatisfactory” or “tardy” individuals (1927, pp. 101-103).

(FIGURE 8 ABOUT HERE)

For Ayer (1953, pp. 175-177) the classification of pupils was a core feature of educational administration, a necessity given that teaching in the state system was provided in groups of (30-50) pupils. Therefore it was required that individuals be allocated to classes. However, there were numerous bases on which pupils could be grouped and considerable variety in practice: “The greatest difficulty in the classification of pupils...is due to the variety of achievements and types of progress sought for in the same group. A group well classified for the study of fifth-grade arithmetic may be poorly classified for the study of fifth-grade music or physical education” (Ayer, 1953, pp. 177-178). Where allocation was based on age or physical criteria there would inevitably be a range of mental abilities within a single class. It was therefore important that a detailed knowledge of the particular capacities of individual pupils in various subjects be gained through devices such as the class distribution profile illustrated in Figure 9.

(FIGURE 9 ABOUT HERE)

Here the ‘musical age’ and ‘arithmetical age’ of individual pupils in a class could be located by reference to the ‘state norm’. Such scattergrams could also be drawn to compare variables such as educational age and mental age (Ross, 1941, pp. 234-235). Pupil progress at different levels of mental development could also be gauged by reference to ‘normal rates’ as illustrated in Figure 10. Similarly, graphical representations such as the educational profile of an individual pupil, as shown in Figure 11, could be constructed in order to identify deviations from normal levels of achievement and determine where “instructional [or other] adjustments” were necessary (Ayer, 1953, pp. 223-225). Such instruments of normalisation offer substantial scope for the exercise of disciplinary power.

(FIGURES 10 AND 11 ABOUT HERE)

Conclusions

This study has been sensitive to the “need to go beyond caricatures of important theorists [such as Foucault and Marx] and to connect them to the specificity of accounting institutions and practices” (Cooper & Tinker, 1994). Accounting historians informed by Foucault’s work have sought evidences of disciplinary instruments, panoptic practices and mechanisms of government in the factory (eg Walsh & Stewart, 1993). In the limited cases where

individuated descriptions, quantifications and employee analyses have been found residing within corporate accounting systems, the extent to which their creation has been shown to be motivated by or operated as disciplinary devices is invariably contested. An attempt has been made here to identify a historical case of an accounting prescription in an institutional setting in closer proximity to Foucault's originating bases.

The aim has been to illustrate the manner in which child accounting, as articulated in the US from the early to the mid-twentieth century, can be interpreted as a practice of disciplinary power. It has been shown that child accounting constituted the pupil-child as an individualised subject. Its potency in this regard derived from its facticity and capacity to disaggregate the pupil from the mass, to present multiple data in a classified, bounded and structured way; a way conducive to the performance of a microscopic analysis of each child. This instrument of surveillance provided holistic knowledge about the temporalized pupil – her/his educational performance, mental capacity, character, morality, physical body, and the socio-economic context in which measurements of these attributes changed. Child accounting offered a means of continuously observing and mapping the pupil-subject and thereby facilitated her/his disciplining by a hierarchy of agents ranging from teachers and parents to the state educational bureaucracy. Through its proformas and inscriptional processes child accounting embodied and reproduced the hierarchical relationships between the pupil and those who held power and authority over her/him. Child accounting fixed the pupil in a disciplinary web. Indeed, child accounting experts acknowledged that the technique was sometimes perceived as “a police activity attached to the schools” (Moehlman, 1940, p. 334).

The gathering of data through testing and the conferment of marks also offered scope for disciplining the pupil-self. The examination might fill the pupil with fear and the mark inscribed in child accounts could define scholastic identity (Meadmore, 1993). The fact that educational progress (or otherwise) was measured and recorded in child accounts could impact on behaviour – motivating, de-motivating and informing perceptions of self (Goslin & Bordier, 1969, p. 29). Further, marks afforded a basis for classifying the pupil in ways which could be self-fulfilling (Tyack, 1974, p. 206). Tests had the capacity to become an “‘engine of cruelty’ by being turned into a method of stamping a permanent sense of inferiority upon the soul of the child” (quoted in Terman, 1922). Likewise they could generate labels indicative of superiority.

Child accounting enabled the establishment of norms and individualised comparisons by reference to them. Through its emphasis on identifying, representing and classifying departures from ‘normal’ educational, psychological and physical progress, child accounts offered a reference point for locating where interventions were necessary by the pupil self or powerful others in order to discipline the child mind and body. More broadly this reading of child accounting shows how accounting processes, classifications and disclosures might mediate social interactions between pupil and teacher, and pupil and others. As with the medical record the requirement here to perform accounting and produce reports could impact on the temporal organisation of teaching practice, the determination of when tests were performed, measurements taken or decisions made about the future education of the child (Berg, 1996). Such practices can also serve to reflect and legitimate organizational designs

and hierarchies (Berg & Bowker, 1997). As with ubiquitous instruments such as the patient record (Berg & Harterink, 2004), while it is often difficult to demonstrate direct impacts on those it inscribes, it is highly likely that child accounting operated in ways which were far from mundane and innocuous.

Although the focus of this study of child accounting has been on the disciplining of the individual pupil it may also inform other Foucauldian readings. Scholars inspired by Foucault's (1991b) writings on governmentality, such as Miller and Rose, might suggest that the circumstances attending the emergence of child accounting illustrate neatly the expansion of programmes designed to govern areas of economic and social life during the late nineteenth and early twentieth centuries. Child accounting can be perceived as a further manifestation of the invention and utilisation of numerous inscriptive techniques to know, observe, intervene and manage targeted populations. Such mechanisms, increasingly controlled by the state, 'swarmed' from enclosed institutional contexts, such as the early-nineteenth century schoolroom, to the later programmes of mass compulsory education, ultimately contributing to the emergence of a disciplinary society (Foucault, 1991a, pp. 211-217).

Whereas innovative accounting practices such as standard costing offered "new ways of acting upon and influencing the actions of individuals" (Miller, 2001) and of activating the regulation of economic life (Miller & Rose, 1990), child accounting reveals the presence of a technology of government in a more explicitly social domain. Indeed the emergence of the technique illustrates how childhood became "the most intensively governed sector of personal existence" in the last century (Rose, 1990, p. 121) when the achievement of programme objectives relied increasingly on "formalized means of calculation" (Rose, 1988).

In early twentieth century America the problem of supplying mass compulsory education in the context of rapid population growth and the social inefficiencies of retardation demanded programmed solutions. In order to be governed the object population (here children of school age) had to be made knowable and visible – observed, measured, represented and analysed (Rose, 1990, pp. 5-6). The principal science utilised to generate the "avalanche of printed numbers" (Rose, 1990, p. 6) necessary to comprehend and govern such target populations was statistics. Democratic governments rendered populations "objects of statisticalization" and devised appropriate statistical systems (Rose, 1991).

But programmes of government could also involve the deployment of calculative innovations and vocabularies suggestive of 'accountingization'. National income accounting, for example, enabled the pursuit of socio-economic objectives (Rose, 1991). And, as revealed here, although child accounting focussed on the individual its abstracted outputs also contributed to wider educational programmes of government. As one contemporary observed "Urbanization of the population, consolidation of schools, and departmentalization of instruction created a demand for records which would *properly account* for the juvenile population in the community" (Flory, 1936, *emphasis added*). Later commentators also recognised that such fundamental changes required new forms of "social bookkeeping" (Lazarsfeld & Sieber, 1964, p. 22). The anonymity and abstraction of statistical knowledge

and national accounting systems could facilitate the governance of enumerated groups. The data generated by child accounting systems could be utilised for the same purpose. However child accounting was much more than a macro-level technology of governance. It was especially lauded for its capacity to generate detailed accounts of the individual pupil.

Manifestations of the measurement craze in American education such as the school survey movement and child accounting can be understood as devices which contributed to the amassment of information about a population to be acted upon, primarily in the institutionalised site of the school, but also by the state, district, family and the self.

Psychological testing also represented one of a suite of “*techniques for the disciplining of human difference*: individualizing humans through classifying them, calibrating their capacities and conducts, inscribing and recording their attributes and deficiencies, managing and utilizing their individuality and variability” (*emphasis in original*, Rose, 1988). The experts who actualised governmentality through these calculative innovations may be characterised as “engineers of the human soul” (Rose, 1990, pp. 2-3). The data they accumulated facilitated the construction of norms against which the attainments of individual children might be gauged and disciplinary action taken by educational and familial authorities or by the pupil self.

The documentary traces about individuals collected in child accounting were totalised, abstracted and distributed through administrative hierarchies to comprehend and govern school populations (Heck, 1925a, pp. 9-17). Where child accounting was implemented teachers, school administrators and state-level bureaucrats had the potential to maintain a panoptic gaze over individual pupils, classes and schools. It does not require a leap of imagination to perceive the techniques of child accounting and the bureaucratic apparatuses it served as a complex of institutions which “acted as observing and recording machines, machines for the regulation of human differences” (Rose, 1988).

This paper opened with a quotation from a meditative work by the writer and literary critic, Alfred Kazin. His words offer a rare insight to the operation of disciplinary power experienced by one who attended a public school in Brooklyn during the 1920s. Recollection of the constant examination of his knowledge, mental capacity and character continued to inspire fear many years later. The tests became “the terror of my childhood” (Kazin, 1951, p. 17). Kazin perceived that “every lesson, every book, every approving smile was only a pretext for the constant probing and watching of me” by his teacher (p. 21). He recalled the systems of rewards and punishment for those boys who performed well in weekly tests: “our “average” was calculated each week, and the boys who scored over 90 per cent or over were rewarded by seeing their own names lettered on the great blue chart over the blackboard. Each time I entered that room for a test, I looked for my name on the blue chart as if the sight of it would decide my happiness for all time” (p. 28). At the centre of this regime was the “white, thinly ruled official record book” on the teacher’s desk (p. 30). Tellingly, the school assembly hall was “dominated by the gold sign above the stage KNOWLEDGE IS POWER” (*emphasis in original*, p. 25). No doubt an aphorism designed to motivate pupils to higher levels of achievement but also an apt reference to the disciplinary instruments which appear to have pervaded the everyday scholastic life of many in early twentieth century America.

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References

- Allen, W.C. (1944). Development of a cumulative record system. In *Handbook of cumulative records* (pp. 10-15). Washington: US Office of Education.
- Armstrong, P. (1994). The influence of Michel Foucault on accounting research. *Critical Perspectives on Accounting* 5 (1), 25-55.
- Ayer, F.C. (1953). *Practical child accounting*, revised edition. Austin, Texas: Steck Co.
- Ayres, L.P. (1909). *Laggards in our schools*. New York: Charities Publication Committee.
- Ayres, L.P. (1915). *Child accounting in the public schools*. Cleveland: Survey Committee of the Cleveland Foundation.
- Berg, M. (1996). Practices of reading and writing: the constitutive role of the patient record in medical work. *Sociology of Health & Illness* 18 (4), 499-524.
- Berg, M. & Bowker, G. (1997). The multiple bodies of the medical record: Toward a sociology of an artefact. *Sociological Quarterly* 38 (3), 513-537.
- Berg, M. & Harterink, P. (2004). Embodying the patient: Records and bodies in early 20th-century US medical practice. *Body & Society* 10 (2-3), 13-41.
- Boyer, P.A. (1944). Use of cumulative records in high school. In *Handbook of cumulative records* (pp. 26-33). Washington: US Office of Education.
- Breen, W.J. (1994). Foundations, statistics, and state-building: Leonard P. Ayres, the Russell Sage Foundation, and U.S. government statistics in the First World War. *Business History Review* 68 (4), 451-482.
- Buckingham, B.R. (1921). Child accounting. *Journal of Educational Research* 3 (3), 218-222.
- Burchell, S., Clubb, C., Hopwood, A., Hughes, J. & Nahapiet, J. (1980). The roles of accounting in organizations and society. *Accounting, Organizations and Society* 5 (1), 5-27.
- Burchell, S., Clubb, C. & Hopwood, A.G. (1985). Accounting in its social context: towards a history of value added in the United Kingdom. *Accounting, Organizations and Society* 10 (4), 381-414.
- Bureau of Educational Research (1929). *Price list. Standard educational tests, child accounting forms, statistical devices*. Chapel Hill, N.C.: Bureau of Educational Research.

- Burgess, W. R. (1947). Leonard P. Ayres: an appreciation. *Journal of the American Statistical Association* 42 (237), 128-133.
- Butts, R.F. (1978). *Public education in the United States. From revolution to reform* (New York: Holt, Rinehart and Winston).
- Callahan, R.E. (1961). Leonard Ayres and the educational balance sheet. *History of Education Quarterly* 1 (1), 5-13.
- Callahan, R.E. (1962). *Education and the cult of efficiency*. Chicago: University of Chicago Press.
- Carmona, S. (2006). Performance reviews, the impact of accounting research, and the role of publication forms. *Advances in Accounting* 22, 241-67.
- Carter, C., McKinlay, A. & Rowlinson, M. (2002). Introduction: Foucault, management and history. *Organization* 9 (4), 515-526.
- Clegg, S. (1998). Foucault, power and organizations. In A. McKinlay & Starkey, K. (eds), *Foucault, management and organization theory. From panopticon to technologies of self* (pp. 29-48). London: Sage.
- Cooper, D. & Tinker, T. (1994). Accounting and praxis: Marx after Foucault. *Critical Perspectives on Accounting* 5 (1), 1-3.
- Courtis, S.A. (1924). Introduction. In A.B. Moehlman (1924a) *Child accounting* (pp. 7-8). Detroit: Friesema Bros Press.
- Cummins, O.B. (1927). Record forms for child-accounting in county school offices. Thesis presented for the degree of Master of Arts, Ohio State University.
- Davis, F.G. (ed.) (1948). *Pupil personnel service*. Scranton: International Textbook Co.
- de Landsheere, G. (1999). History of educational research. In J.P. Keeves & Lakomski, G. (eds), *Issues in educational research* (pp. 15-29). Oxford: Pergamon.
- Dewey, J. (1921). Mediocrity and individuality. Reproduced in J.A. Boydston & Levine, B. (eds) (1983). *John Dewey The middle works, 1899-1924 Volume 13: 1921-1922* (pp. 289-294). Carbondale and Edwardsville, Southern Illinois University Press.
- Dewey, J. (1922). Individuality, equality and superiority. Reproduced in J.A. Boydston & Levine, B. (eds) (1983). *John Dewey The middle works, 1899-1924 Volume 13: 1921-1922* (pp. 295-300). Carbondale and Edwardsville: Southern Illinois University Press.
- Drager, W.C. (1940). A collection of educational terms and definitions in the fields of child accounting and compulsory education. MA thesis, Ohio State University.
- Findley, W.K. (1944). Description of two unique ways in which cumulative records are used. In *Handbook of cumulative records* (pp. 82-89). Washington: US Office of Education.
- Flory, C.D. (1936). Cumulative records for research purposes. *Journal of Educational Research* 30 (3), 157-168.

Foucault, M. (1982). Afterword: The subject and power. In Dreyfus, H. L. & Rabinow, P. (1982). *Michel Foucault: Beyond structuralism and hermeneutics* (pp. 208-226). Chicago: The University of Chicago Press.

Foucault, M. (1991a). *Discipline and punish. The birth of the prison*. London: Penguin.

Foucault, M. (1991b). Governmentality. In G. Burchell, C. Gordon & P. Miller (eds), *The Foucault effect: Studies in governmentality* (pp. 87-104). Chicago: University of Chicago Press.

Garinger, E.H. (1940). Pupil accounting - At Central High School, Charlotte, North Carolina. In N.W. Newsom & R.E. Langfitt (eds), *Administrative practices in large high schools* (pp. 469-504). New York: American Book Company.

Good, H.G. (1956). *A history of American education*. New York: Macmillan Company.

Goslin, D.A. & Bordier, N. (1969). Record-keeping in elementary and secondary schools. In S. Wheeler (ed), *On record. Files and dossiers in American life* (pp. 29-65). New York: Russell Sage Foundation.

Grey, C. (1994). Debating Foucault: a critical reply to Neimark. *Critical Perspectives on Accounting* 5 (1), 5-24.

Hassard, J. & Rowlinson, M. (2002). Researching Foucault's research: organization and control in Joseph Lancaster's monitorial schools. *Organization* 9 (4), 615-639.

Heck, A.O. (1925a). *A study of child-accounting records*. Columbus: Ohio State University.

Heck, A.O. (1925b). Recent sentiment concerning uniformity in child-accounting. *Educational Research Bulletin* 4 (3), 45-51.

Heck, A.O. (1929a). *Administration of pupil personnel*. Boston: Ginn and Company.

Heck, A.O. (1929b). Review of McAllister-Otis. *Child Accounting Practice. Journal of Educational Research* 19 (3), 207-208.

Heck, A.O. (1940). *The education of exceptional children*. New York: McGraw-Hill Book Co.

Herrick, M.J. (1996). Assessment of student achievement and learning, what would Dewey say? A 'recent' interview with John Dewey. *Journal of Vocational and Technical Education* 13 (1), 17-29.

Hopwood, A.G. (1983). On trying to study accounting in the contexts in which it operates. *Accounting, Organizations and Society* 8 (2/3), 287-305.

Hopwood, A. G. (1985). The tale of the committee that never reported: disagreements on intertwining accounting with the social. *Accounting, Organizations and Society* 10 (3), 361-377.

Hopwood, A.G. (1987). The archaeology of accounting systems. *Accounting, Organizations and Society* 12 (4), 207-34.

Hopwood, A.G. (2007). Whither accounting research? *Accounting Review* 82 (5), 1365-1374.

- Hopwood, A.G. & Johnson, H.T. (1986). Accounting history's claim to legitimacy. *International Journal of Accounting* 21 (2), 37-46.
- Hoskin, K. (1990). Foucault under examination: the crypto-educationalist unmasked. In S.J. Ball (ed.), *Foucault and education. Disciplines and knowledge* (pp. 29-53). London: Routledge.
- Hoskin, K. (1994). Boxing clever: for, against and beyond Foucault in the battle for accounting theory. *Critical Perspectives on Accounting* 5 (1), 57-85.
- Hoskin, K. (1998). Examining accounts and accounting for management: Inverting understandings of 'the economic'. In A. McKinlay & Starkey, K. (eds), *Foucault, management and organization theory. From panopticon to technologies of self* (pp. 93-110). London: Sage.
- Hoskin, K.W. & Macve, R.H. (1986). Accounting and the examination: a genealogy of disciplinary power. *Accounting, Organizations and Society* 11 (2), 105-136.
- Hoskin, K.W. & Macve, R.H. (1988). The genesis of accountability: the West Point connections. *Accounting, Organizations and Society* 13 (1), 37-73.
- Hoskin, K. & Macve, R. (1994). Writing, examining, disciplining: the genesis of accounting's modern power. In A.G. Hopwood and Miller, P. (eds), *Accounting as social and institutional practice* (pp. 67-97). Cambridge: Cambridge University Press.
- Hutchinson, J.H. (1914). *School costs and school accounting*. New York: Teachers College, Columbia University.
- Iowa State Teachers Association (1927). *A uniform child accounting system for the state of Iowa*. Des Moines: n.p.
- Katz, M.S. (1976). *A history of compulsory education laws*. Bloomington, Indiana: Phi Delta Kappa Educational Foundation.
- Kawin, E. (1944). Use of records in the elementary school. In *Handbook of cumulative records* (pp. 16-25). Washington: US Office of Education.
- Kazin, A. (1951). *A walker in the city*. New York: Harcourt, Brace, and World.
- Kearins, K. & Cooper, K. (2002). Genealogical method and analysis. *Accounting, Auditing & Accountability Journal* 15 (5), 733-757.
- Lagemann, E.C. (2000). *An elusive science. The troubling history of education research*. Chicago: University of Chicago Press.
- Lazarsfeld, P.F. & Sieber, S.D. (1964). *Organizing educational research. An exploration*. Englewood Cliffs: Prentice Hall, Inc.
- Leonard, E.A. & Tucker, A.C. (1941). *The individual inventory in guidance programs in secondary schools*. Washington: US Office of Education.

Manual for child accounting and pupil personnel work in Pennsylvania (1953). Harrisburg: Department of Public Instruction.

Manual of instructions. Uniform child accounting for Minnesota school districts (1955). St Paul: Department of Education.

Marshall, J.D. (1990). Foucault and educational research. In S.J. Ball (ed.), *Foucault and education. Disciplines and knowledge* (pp. 11-28). London: Routledge.

McAllister, A.J. & Otis, A.S. (1927). *Child accounting practice. A manual of child accounting technique*. Yonkers-on-Hudson: World Book Company.

McKinlay, A. (2006). Managing Foucault: genealogies of management. *Management & Organizational History* 1 (1), 87-100.

McKinlay, A. & Starkey, K. (1998). Managing Foucault: Foucault, management and organization theory. In A. McKinlay and Starkey, K. (eds), *Foucault, management and organization theory. From panopticon to technologies of self* (pp. 1-13). London: Sage.

McNicholas, M.L. (1931). *Child accounting in Catholic elementary schools. A dissertation*. Washington: The Catholic University of America.

Meadmore, D. (1993). The production of individuality through examination. *British Journal of Sociology of Education* 14 (1), 59-73.

Michigan State Teachers' Association (1923). *Preliminary report of the committee on uniform child accounting and unit costs*. Lansing: n.p.

Michigan State Teachers' Association (1924). *A state system of uniform child accounting*. Lansing: n.p.

Miller, P. (1994). Accounting as social and institutional practice: an introduction. In A.G. Hopwood & Miller, P. (eds.), *Accounting as social and institutional Practice* (pp. 1-39). Cambridge: Cambridge University Press.

Miller, P. (1998). The margins of accounting. *European Accounting Review* 7 (4), 605-621.

Miller, P. (2001). Governing by numbers: Why calculative practices matter. *Social Research* 68 (2), 379-396.

Miller, P. & Napier, C. (1993). Genealogies of calculation. *Accounting, Organizations and Society* 18 (7/8), 631-647.

Miller, P. & O'Leary, T. (1987). Accounting and the construction of the governable person. *Accounting, Organizations and Society* 12 (3), 235-265.

Miller, P. & O'Leary, T. (1989). Hierarchies and American ideals, 1900-1940. *Academy of Management Review* 14 (2), 250-265.

Miller, P. & Rose, N. (1990). Governing economic life. *Economy and Society* 19 (1), 1-31.

- Moehlman, A.B. (1924a). *Child accounting*. Detroit: Friesema Bros Press.
- Moehlman, A.B. (1924b). Child accounting. I-Present conditions. *Journal of Educational Research* 9 (4), 293-304.
- Moehlman, A.B. (1924c). Child accounting. II-Historical aspects. *Journal of Educational Research* 9 (5), 415-423.
- Moehlman, A.B. (1940). *School administration. Its development, principles and future in the United States*. Boston: Houghton Mifflin Co.
- Morris, N. & Rothman, D.J. (1998). Introduction. In N. Morris and Rothman, D.J. (eds), *The Oxford history of the prison* (pp. vii-xiv). Oxford: University Press.
- Mort, P.R., Wright, W.W. & Featherstone, W.B. (1932). *Fitting the school to the pupil. An application of educational accounting techniques to the Chicago public schools*. New York: Teachers' College, Columbia University.
- Mosher, C.L. (1933). *Digest of laws, rules of procedure and forms, for the use of school authorities, superintendents, attendance officers and others*. Albany: University of the State of New York Press.
- MPAAA (Michigan Pupil Accounting and Attendance Association) (2009). Available at <http://www.mpaaa.org/membership.htm>. Accessed 2 November 2009.
- National Education Association (1912). Final report of the committee on uniform records and reports to the national council. Chicago: University of Chicago Press.
- Neimark, M. (1990). The king is dead. Long live the king! *Critical Perspectives on Accounting* 1 (1), 103-114.
- Neimark, M.K. (1994). Regicide revisited: Marx, Foucault and accounting. *Critical Perspectives on Accounting* 5 (1), 87-108.
- North Carolina (1954). *Child accounting and school attendance*. Raleigh, N.C.: Department of Public Instruction.
- O'Neill, J. (1986). The disciplinary society: From Weber to Foucault. *British Journal of Sociology* 37 (1), 42-60.
- Otto, H.J. (1934). *Elementary school organization and administration*. New York: D. Appleton-Century Company.
- Patterson, J.T. (2001). *Brown v. Board of Education: A civil rights milestone and its troubled legacy*. New York: Oxford University Press.
- Putnam, J.F. (1974). *Student/pupil accounting: Standard terminology and guide for managing student data in elementary and secondary schools, community/junior colleges, and adult education*. Washington: US Government Printing Office.

- Reeder, W.G. (1958). *The fundamentals of public school administration*. New York: Macmillan Company.
- Reinoehl, C.M. & Ayer, F.C. (1940). *Classroom administration and pupil adjustment*. New York: D. Appleton-Century Company.
- Rose, N. (1988). Calculable minds and manageable individuals. *History of the Human Sciences* 1 (2), 179-200.
- Rose, N. (1990). *Governing the soul. The shaping of the private self*. London: Routledge.
- Rose, N. (1991). Governing by numbers: figuring out democracy. *Accounting, Organizations and Society* 16 (7), 673-692.
- Ross, C.C. (1941). *Measurement in today's schools*. New York: Prentice-Hall Inc.
- Rowlinson, M. & Carter, C. (2002). Foucault and history in organizations studies. *Organization* 9 (4), 527-547.
- Ruch, G.M. & Segel, D. (1940). *Minimum essentials of the individual inventory in guidance*. Washington: US Government Printing Office.
- School Attendance/Child Accounting (2008). Pennsylvania Department of Education. Available at <http://www.pde.state.pa.us/child%5Facct/site/>. Accessed 25 June 2008.
- Segel, D. (1938). *The nature and use of cumulative records*. Washington: US Office of Education.
- Segel, D. (1944). Occurrence of items in cumulative records in use in the United States. In *Handbook of cumulative records* (pp. 1-9). Washington: US Office of Education.
- Shear, B.E. (1971). Pupil personnel services: history and growth. *Theory into Practice* 4 (4), 133-139.
- Stewart, R.E. (1992). Pluralizing our past: Foucault in accounting history. *Accounting, Auditing & Accountability Journal* 5 (2), 57-73.
- Strayer, G.D., Engelhardt, N.L. & Williams, C.F. (1927). *School records: School record cards, forms books and systems for pupil and financial accounting*. Albany, New York: C.F. Williams & Sons Inc.
- Strayer, G.D. & Thorndike, E.L. (1913). *Educational administration quantitative studies*. New York: Macmillan Company.
- Sullivan, J.D. (1918). *Census, child welfare and compulsory education bureaus*. Albany: University of the State of New York Press.
- Taylor, D.H. (1930). Review of *Administration of Pupil Personnel* by A.O. Heck. *Journal of Educational Sociology* 3 (7), 440.

- Terman, L. (1922). The great conspiracy or the impulse imperious of intelligence testers, psychoanalyzed and exposed by Mr. Lippmann. *New Republic* 12, 116-120.
- Thorndike, E.L. (1904). *An introduction to the theory of mental and social measurements*. New York: The Science Press.
- Thorndike, E.L. (1908). *The elimination of pupils from school*. Washington: Government Printing Office.
- Tyack, D.B. (1974). *The one best system. A history of American urban education*. Cambridge, Mass.: Harvard University Press.
- Tyack, D.B. (1976). Pilgrim's progress: Toward a social history of the school superintendency, 1860-1960. *History of Education Quarterly* 16 (3), 257-300.
- Tyack, D. & Berkowitz, M. (1977). The man nobody liked: toward a social history of the truant officer, 1840-1940. *American Quarterly* 29 (1), 31-54.
- Walker, S.P. (2008a). Accounting, paper shadows and the stigmatised poor. *Accounting, Organizations and Society* 33 (4/5), 453-487.
- Walker, S.P. (2008b). The search for innovation, convergence and argument without end in accounting history. *Accounting, Auditing & Accountability Journal* 21 (2), 296-322.
- Walsh, E. & Stewart, R. (1993). Accounting and the construction of institutions. The case of a factory. *Accounting, Organizations and Society* 18 (7/8), 783-800.
- Wilson, R.E. (1966). *Educational administration*. Columbus: Charles E. Merrill Books Inc.
- Yeager, W.A. (1949). *Administration and the pupil*. New York: Harper & Brothers.
- Young, K. (1929). Book Reviews. *American Journal of Sociology* 34 (6), 1201-1202.

FIGURE 1
Census Continuous Field Sheet and Family Record

PRESENT ADDRESS	STREET	NUMBER	WARD	BUILDING DISTRICT	ARABIA (n) COLORED (n) GREECE (n) JUNG SLAVIA (n) PERIA (n) SWEDEN (n) AFRICA (n) CZECH-SLOVAKIA (n) HOLLAND (n) LATVIA (n) POLAND (n) SWITZERLAND (n) AUSTRIA (n) DENMARK (n) HUNGARY (n) LITHUANIA (n) PORTUGAL (n) SYRIA (n) BELGIUM (n) ENGLAND (n) INDIA (n) MALAY PENINSULA (n) ROMANIA (n) TURKEY (n) BOMBARIA (n) ESTONIA (n) IRELAND (n) MONTENEGRO (n) RUSSIA (n) U. S. WHITE (n) BULGARIA (n) FINLAND (n) ITALY (n) NEGRO (n) SCOTLAND (n) U. S. WHITE (n) CANADA (n) FRANCE (n) JAPAN (n) NETHERLANDS (n) SERBIA (n) U. S. WHITE (n) CHINA (n) GERMANY (n) JEWISH (n) NORWAY (n) SPAIN (n) U. S. WHITE (n)																		
PREVIOUS ADDRESS					CENSUS ZONE		BLOCK																
FATHER'S	FAMILY NAME		GIVEN NAME		HOME OWNER		TENANT																
MOTHER'S																							
CHILD'S																							
					SEX	AGE	DATE OF BIRTH			CITIZENSHIP	PHYSICAL DEFECTS			TYPE OF SCHOOL ATTENDING		NAME OF SCHOOL							
					M	F	MONTH	DAY	YEAR	U. S.	OTHER	BLIND	DEAF	CRIPPLED	MENTALLY DEFICIENT	NON-PUBLIC	PUBLIC	PUBLIC					
1.																							
2.																							
3.																							
4.																							
5.																							
6.																							
7.																							
8.																							
9.																							
10.																							

Source: Michigan State Teachers' Association, 1924, p. 16; Moehlman, 1924a, p. 178.

FIGURE 2
Census Registration Card

Census Registration Card – Elementary School										
(SCHOOL COPY)										
To parent and teacher: The information asked for below and on the other side is required for the child's school record.										
Ayer Integrated Child Accounting Series										
NAME OF	Boy <input checked="" type="checkbox"/> Girl	(Last Name)	(First)	(Middle)	Birthplace (Country)	*Nationality	**Race	Speaks English		
								Yes	No	
	PUPIL	<i>Schmidt</i>	<i>Willie</i>	<i>James</i>	<i>Texas</i>	<i>German</i>	<i>White</i>	<input checked="" type="checkbox"/>		
	FATHER	<i>Schmidt</i>	<i>James</i>	<i>Fritz</i>	<i>Texas</i>	<i>German</i>	<i>White</i>	<input checked="" type="checkbox"/>		
	MOTHER	<i>Died in 1945</i>			<i>Texas</i>	<i>Mexican</i>	<i>White</i>			
LEGAL GUARDIAN										
*Report nationality as French, German, English, Mexican, etc. **Report race as White, Colored, Indian, etc.										
Birthdate of Pupil:					Date of Vaccination					Results
<i>July 15 1938</i> Mo. Day Year					<i>May 6, 1944</i>					<i>Satisfactory</i>
Birthdate based on:					Father Living? <i>Yes</i> Address <i>816 Cedar St.</i> Occupation <i>Carpenter</i>					
<input checked="" type="checkbox"/> Birth Certificate					Mother Living? <i>No</i> Address _____ Occupation _____					
_____ Bible					Full name of person (or institution) with whom pupil lives, if not with both parents:					
_____ Official Census					Name <i>Father remarried in 1947</i>					
_____ Pupil's Statement					Relationship _____ Address <i>Johnson City</i>					
_____ Parent's Statement					Residence of pupil on April 1 of preceding school year (if recently moved to this school district).					
					County <i>Blanco</i> District _____ I.S.D. or C.S.D. _____					
					Date moved to this district <i>July 1948</i> Date now <i>Sept. 1948</i>					
Distance pupil is transported _____ Bus Route _____ Run No. _____										
Signature of Parent or Guardian <i>James Schmidt</i> Telephone No. <i>24261</i>										
COPYRIGHT 1952 BY THE STECK COMPANY, AUSTIN, TEXAS										

NAME <i>Schmidt Willie James</i>					
Indicate below by check (✓) major physical defects, if any:		GIVE BELOW THE PUPIL'S PAST SCHOOL RECORD			
— 1. Deficient Vision		Town or City of Residence	Grade	School Year	Years in Each Grade
<input checked="" type="checkbox"/> 2. Deficient Hearing			Preschool		
— 3. Orthopedic (crippling) Handicaps		<i>Johnson City</i>	I	<i>1944-46</i>	<i>Two</i>
— 4. Speech Disorders		" "	II	<i>1946-47</i>	<i>One</i>
— 5. Lowered Vitality		" "	III	<i>1947-48</i>	<i>One</i>
— 6. Nervous Disorders		<i>Austin</i>	IV	<i>1948-49</i>	
— 7. Mentally Retarded			V		
— 8.			VI		
			VII		
Give below names, ages, etc., of brothers and sisters or any other children under 18 living in your family.					
Name	Birthdate (Yr.) (Mo.) (Day)	In What School or Work	Name	Birthdate (Yr.) (Mo.) (Day)	In What School or Work
<i>Mary Jane</i>	<i>'48-Jan-28</i>	<i>Home</i>			
<i>Henry E.</i>	<i>'32-Mar-4</i>	<i>Clerk</i>			
Blanks below to be filled out by the teacher. Please see that all data are complete.					
School: <i>Baker</i>	Date entered	(Age Sept. 1, Last) (Yrs.) (Mo.)	Grade, section, and room assigned to:		
District No.:	<i>Sept. 10, 1948</i>	<i>10 1</i>	<i>IV - 16</i>		
Tuition Pupil? Yes No <input checked="" type="checkbox"/>	Tuition paid by whom				
Teacher's Signature <i>Ester J. Brown</i> (over)					

Source: Ayer, 1953, pp. 38-39.

FIGURE 3

Individual Cumulative Record – Page 1 Social History and Elementary School Record

[illegible]

Individual Cumulative Record – Page 2 Intermediate and High School Record

[illegible]

Individual Cumulative Record – Page 3 Achievement and Mental Tests Record

[illegible]

Individual Cumulative Record – Page 4 Health Record

NAME														SEX												
GRADE OR YEAR	KDG.N.		1		2		3		4		5		6		7		8		9		10		11		12	
DATE OF PHYSICAL EXAMINATION																										
	D	K-T	D	K-T	D	K-T	D	K-T	D	K-T	D	K-T	D	K-T	D	K-T	D	K-T	D	K-T	D	K-T	D	K-T	D	K-T
SKIN																										
ANEMIA																										
THYROID																										
TONSILS																										
MOUTH BREATHING																										
TEETH																										
PALATE																										
CERVICAL GLANDS																										
ORTHOPEDIC																										
PHIMOSIS																										
VISION																										
HEARING																										
VACCINATION (DATE, RESULT)																										
MENTALITY																										
AGE																										
NORMAL WEIGHT (LBS.)																										
HEIGHT (INCHES)																										
% UNDER WEIGHT																										
COMMUNICABLE DISEASES (GIVE DATES):																										
TOXIN—ANTITOXIN DOSES (DATES)	1st				2d				3d																	
CODE: 0 NO DEFECT																										
OO ABNORMAL CONDITION																										
CORRECTED																										
X VERY SLIGHT DEFECT																										
. . . . DEFECT TO FOLLOW UP																										
P PUS																										
D DEFECT																										
K CORRECTED OR SUCCESSFUL VACCINATION																										
T TREATING OR UNSUCCESSFUL VACCINATION																										

Individual Cumulative Record – Page 5 Record of Vital and Emotional Characteristics

I. IDEALS AND CHARACTER	III. SELF DIRECTION: INITIATIVE
II. SELF APPRAISAL: JUDGMENT	IV. CO-OPERATIVE EFFORT: SOCIAL ATTITUDE

Individual Cumulative Record – Page 6 Vocational Tendencies

VOCATIONAL INFORMATION	NOTES
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Source: Michigan State Teachers' Association, 1924, pp. 27-32.

Pupil Daily Record: Elementary

19																								First Name				Middle Name				Last Name			
For the year beginning						If pupil withdrew give date and reason, and recommend grade assignment																		Half Days											
Mo.	M	T	W	T	F	M	T	W	T	F	M	T	W	T	F	M	T	W	T	F	On roll	Off roll	Att.	Abs.	Tardy	Treat	School	Room	Grade						
1st																																			
2d																																			
3d																																			
4th																																			
5th																																			
6th																																			
7th																																			
8th																																			
9th																																			
10th																																			
11th																																			
12th																																			
Number of weeks in each scholarship period if other than four										Totals																									
School record period	Spelling	Reading	Writing	Grammar or Language	Arithmetic or Numbers	Geography	Physics or Hygiene	U.S. History	Civics or Citizenship	Agriculture	Manual Training	Drama Art	Domestic Science	Vocational Music	Drawing															Teacher's or principal's signature					
1st																																			
2d																																			
3d																																			
4th																																			
5th																																			
6th																																			
7th																																			
8th																																			
9th																																			
10th																																			
11th																																			
12th																																			
Sch. Year	1																																		
Year	2																																		
Progress by subject																																			

Sample Record: Elementary, approximately three-fourths full size. This form is used for keeping the attendance, scholarship and test record of one elementary pupil for one school year, in a graded or an ungraded school, having annual or semi-annual promotions. At the close of the year or term the summary of the pupil's attendance and scholarship should be posted from this form to Form 4

← Pages of text-book satisfactorily covered, projects, exercises, or units completed, or goals attained.

Source: McAllister and Otis, 1927, p. 33.

Pupil Daily Record: Elementary, Test Record

[illegible]

Source: McAllister and Otis, 1927, p. 34.

FIGURE 6
Age-Grade Summary

SCHOOL	YEAR	TEACHERS' NAME		CITY		GRADE AND CLASS		SCHOOL											
FOR THE PURPOSE OF THIS REPORT A CHILD'S SCHOOL AGE IS HIS CHRONOLOGICAL AGE AS OF SEPTEMBER FIRST OF THE CURRENT SCHOOL YEAR. THE OFFICIAL AGE MAY BE FOUND IN THE TABLE ON THE REVERSE SIDE																			
	UNDER 5	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21 AND OVER	TOTALS
POST GRADUATES																			
TWELFTH																			
ELEVENTH																			
TENTH																			
NINTH																			
EIGHTH																			
SEVENTH																			
SIXTH																			
FIFTH																			
FOURTH																			
THIRD																			
SECOND																			
FIRST																			
KINDERGARTEN																			
OPEN AIR																			
BLIND																			
CRIPPLED																			
DEAF																			
MENTAL DEF																			
INCORRIGIBLES, TRUANTS																			
SPECIAL PREPARATORY																			
SPECIAL ADVANCED																			
TOTALS																			

Source: Moehlman, 1924a, p. 195.

FIGURE 7
Pupil Classification Card

Pupil		Date		Grade		Boy	
						Girl	
Address		Tel. No.		Home Room		Parent	
School		Teacher					
Date of Birth		Height		Weight			
Entrance grade in this school system		Entrance grade in this school					
Grades skipped		Grades repeated		Half years spent in kindergarten		College?	
Does pupil expect to go to high school?		College?					
What does he want to do when he finishes school?							
Does he take music lessons outside of school?		Other lessons, if any, outside of school?					
Member of the following school teams or other organizations:							
Outside organizations:							
What musical instruments?							
What magazine does he read most?		How is out-of-school time spent?					
Is there a room in the home where he can study by himself?		What kind of music does he like best?		Has he a card for the public library?		Times each week spent at the movies?	
What language is spoken in the home?		How many books in the home?					
Specific Weaknesses							
Physical Defects							
Too mature socially for this group?		Too immature?		Does the program of this pupil vary from that of the class as a whole in any manner?			
Has this pupil ever been in a class of other than average ability pupils? (Give grade and nature of class and success)							
Variations from section program at any time in past (give grade, type of section, and nature of variation)							
Any other irregular features in this pupil's school history							
<i>Folds Here to Make 6 x 4 Card</i>							
Enrollment in this class		Type of class					
Draw a line through each item in which this pupil is one of the best 5 in his class; encircle each item in which this pupil is one of the poorest 5 in his class. Indicate scholarship in blanks:							
1. General Ability	5. Leadership	9. Freehand Drawing	13. Spelling				
2. Mechanical Ability	6. Reading	10. Arithmetic	14. Music				
3. Attitude toward Work	7. Nature Study & Science	11. History	15. Shop Work				
4. Health	8. Language Usage	12. Literature					

		Age		GRADE										
		Equivalents		3	4	5	6	7	8	9	10			
Variation from Normal Weight	Scores			8	9	10	11	12	13	14	15	16		
I. Q.	E. Q.	Average												
Chronological Age														
Height														
Mental Test														
Achievement, Average														
Reading, Paragraph Meaning														
Reading, Sentence Meaning														
Reading, Word Meaning														
Arithmetic Computation														
Arithmetic Reasoning														
Nature Study and Science														
History and Literature														
Language Usage														
Spelling														
Mechanical Aptitude														

_____ Pupil's Record. _____ Record of Section to which assigned.
Use vertical line to represent grade standard.

Source: Strayer et al., 1927, p. 39.

First Name		Middle Name	Last Name	Character and Health Record (Form 6)		PHYSICAL GROWTH		
				Made out (Date) <u>Sept. 1, '26</u> by <u>A. E. M.</u>		Date	Height	Weight
<div style="font-size: 1.2em; font-weight: bold;">MENTAL AND EDUCATIONAL GROWTH CHART</div>								
<div style="writing-mode: vertical-rl; transform: rotate(180deg);"> Mo. Yr. 228 19 216 18 204 17 192 16 180 15 168 14 156 13 144 12 132 11 120 10 108 9 96 8 84 7 72 6 60 5 </div>								
<div style="font-size: 0.8em;"> Chronological Age 60 72 84 96 108 120 132 144 156 168 180 192 204 216 228 </div>								
<div style="font-size: 0.8em;"> Mental and Educational Age 60 72 84 96 108 120 132 144 156 168 180 192 204 216 228 </div>								
<div style="font-size: 0.8em;"> Years Months </div>								
<div style="font-size: 0.8em;"> Enter physical growth data from bottom upward, </div>								

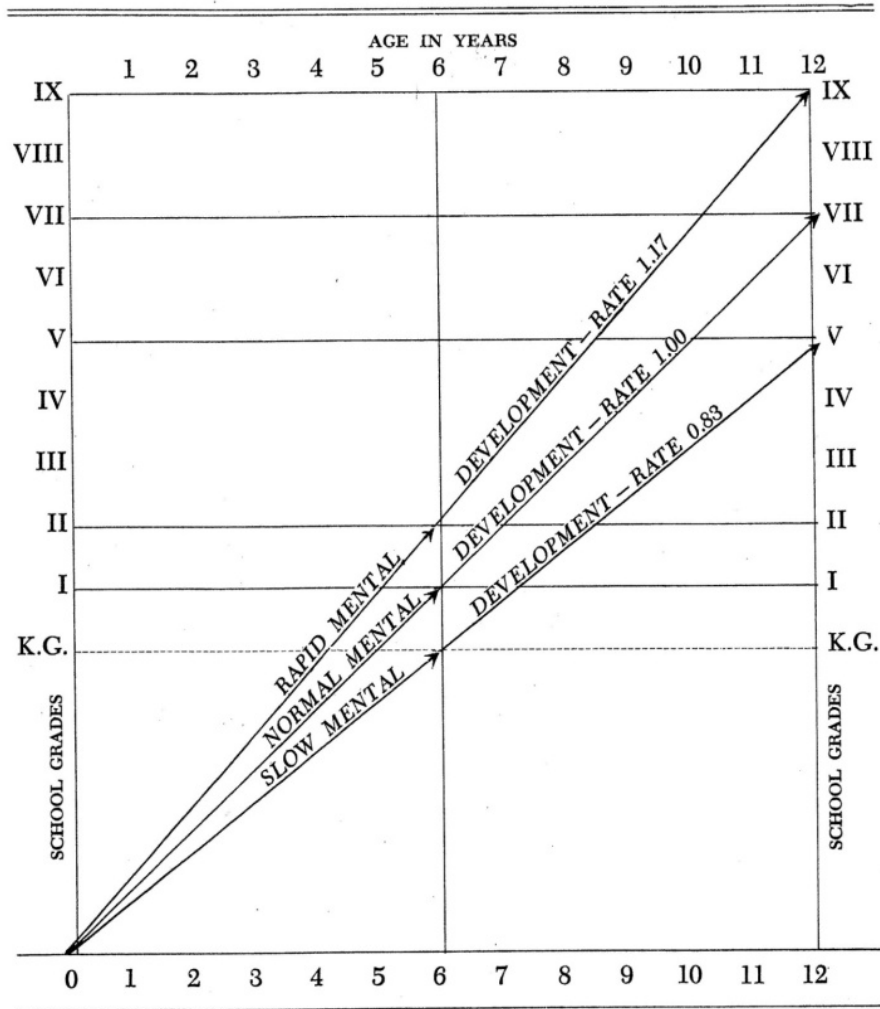
52

FIGURE 9
Two-way Distribution of Musical Age and Arithmetical Age in an Eighth-Grade Class
of 26 (A to Z) Pupils

M U S I C A L A G E														
A R I T H M E T I C A L A G E	YEARS ➤	12	12.5	13	13.5	14	14.5	15	15.5	16	16.5	17	TOTAL	
	▼ FRE- QUENCY	3	2	4	4	5	3	2	2	0	1	0	26	
	12	1				A								
	12.5	2			B C									
	13	2					E		D					
	13.5	3		F		G	(S T A T E N O R M)				H			
	14	4	I		J	(S T A T E N O R M)	K	L						
	14.5	5		M	N		O	P	Q					
	15	3	R		S		T							
	15.5	2			U		V							
	16	1	W			(S T A T E N O R M)								
	16.5	0												
	17	2					X Y							
	17.5	1					Z							
	TOTAL	26												

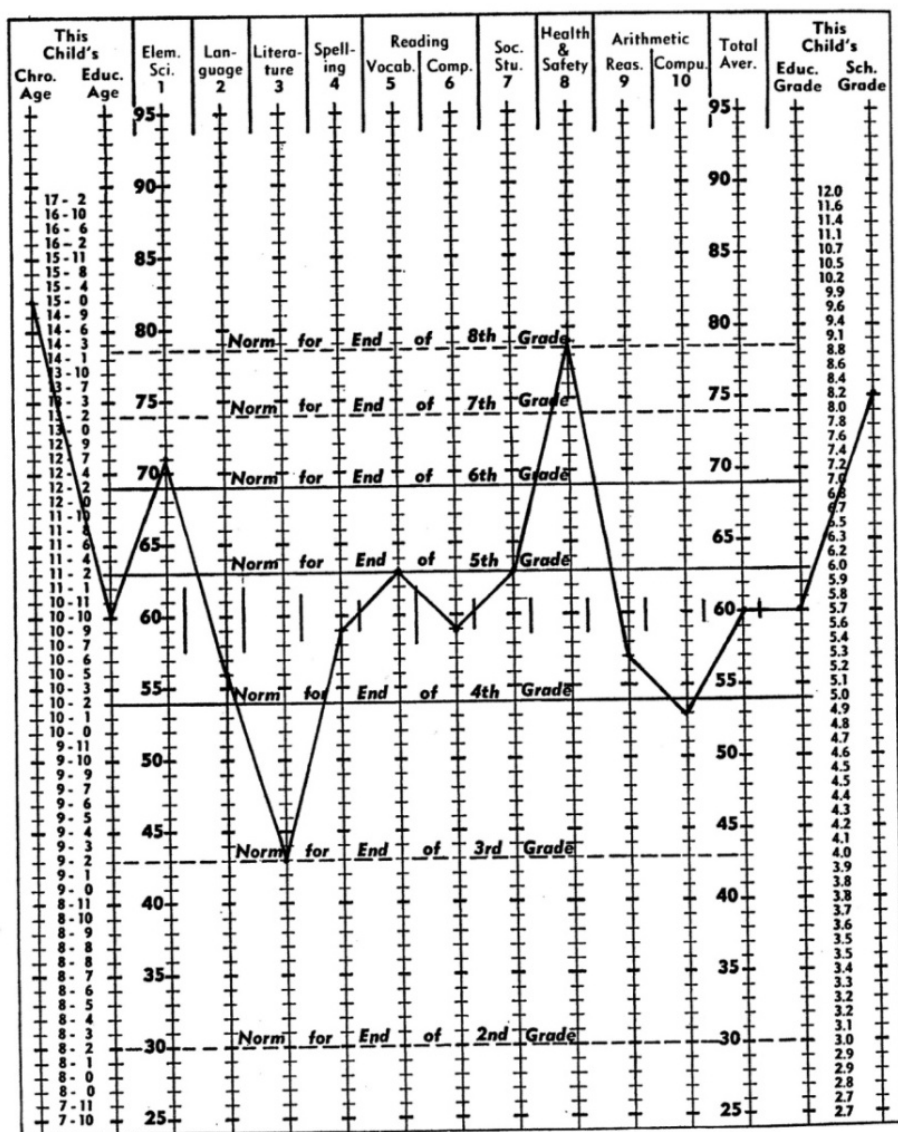
Source: Ayer, 1953, p. 179.

FIGURE 10
Theoretical Rates of Progress Through School Grades Based on Different Rates of Mental Development



Source: Ayer, 1953, p. 186.

FIGURE 11
Educational Profile of an Eighth-Grade Boy



Source: Ayer, 1953, p. 225.